Test Bank for Trigonometry 12th Lial

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

List all the elements of set B that are of the indicated type.

1) $B = \{14, \sqrt{6}, -10, 0, \frac{0}{7}, \sqrt{4}\}$

Integers

A) $14, 0, \sqrt{4}$ B) $14, 0$ C) $14, -10, 0$ D) $14, -10, 0, \frac{0}{7}, \sqrt{4}$

Answer: D

2) $B = \{18, \sqrt{5}, -21, 0, \frac{0}{8}, \sqrt{16}\}$

Whole numbers

A) $18, 0, \frac{0}{8}, \sqrt{16}$ B) $18, 0$ C) $18, -21, 0, \sqrt{16}$ D) $18, -21, 0$

Answer: A

3) $B = \{13, \sqrt{7}, -13, 0, \frac{0}{16}, \sqrt{16}\}$

Natural numbers

A) $13, 0, \frac{0}{2}$ B) $13, \sqrt{16}$ C) $13, 0$ D) $13, 0, \sqrt{16}$

Answer: B

4) $B = \{15, \sqrt{5}, -6, 0, \frac{0}{1}, \sqrt{25}, \frac{-6}{0}\}$

Real numbers

A) $15, \sqrt{5}, -6, 0, \frac{0}{1}, \sqrt{25}$ B) $15, -6, 0, \frac{0}{1}, \sqrt{25}$

C) $15, -6, 0, \sqrt{25}$ D) $15, -6, 0, \frac{0}{1}, \frac{-6}{0}$

Answer: A

5) $B = \{18, \sqrt{6}, -20, 0, \frac{0}{6}, \sqrt{16}, \pi, \frac{-8}{0}, 0.04\}$

Rational numbers

A) $\sqrt{6}, \frac{0}{6}, 0.04$ B) $18, -20, 0, \frac{0}{6}, \sqrt{16}, 0.04$

C) $\sqrt{6}, \sqrt{16}$ D) $18, 0, \sqrt{16}, \pi$

Answer: B

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6) B = $\{-\sqrt{16}, 18, \sqrt{5}, -20, 0, \frac{0}{5}, \pi, \frac{-8}{0}, 0.72\}$

Irrational numbers

A) $-\sqrt{16}, \sqrt{5}, 0.72$ B) $-\sqrt{16}, \sqrt{5}, \pi$ C) $\sqrt{5}, \pi$ D) $\sqrt{5}, \frac{-8}{0}, \pi$

Answer: C

Identify the set as finite or infinite.

7) {3, 5, 7, . . ., 13}

A) finite B) infinite

Answer: A

8) {5, 8, 11, . . .}

A) infinite B) finite

Answer: A

9) $\left\{1, \frac{1}{5}, \frac{1}{25}, \frac{1}{125}, \ldots, \right\}$

A) infinite B) finite

Answer: A

10) {x | x is a natural number larger than 8}

A) infinite B) finite

Answer: A

11) {x | x is a fraction between 0 and 1}

A) infinite B) finite

Answer: A

12) {x | x is an odd natural number}

A) finite B) infinite

Answer: B

13) {x | x is an animal alive now}

A) infinite B) finite

Answer: B

Write the set by listing its elements.

14) {x | x is a natural number less than 12}

A) {1, ..., 9, 10, 11} B) {1, ..., 9, 10, 11, 12} C) {0, 1, ..., 9, 10, 11} D) {1, ..., 7, 9, 11}

Answer: A

15) {a | a is an integer greater than −14}

A) {−12, −10, −8, ...} B) {−20, −18, −16, −14, ...}

C) {−14, −13, −12, −11, ...} D) {−13, −12, −11, ...}

Answer: D

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16) {a | a is an even integer greater than 6}

A) {6, 8, 10, 12, ...} B) {0, 2, 4, ...} C) {8, 10, 12, ...} D) {7, 8, 9, ...}

Answer: C

17) {z | z is a number whose absolute value is 1}

A) {–1, 1} B) {–1, ..., 1} C) {–1} D) {1}

Answer: A

18) {p | p is an irrational number that is also rational}

A) {–1} B) {1} C) ∅ D) {0}

Answer: C

19) {a | a is a whole number multiple of 4}

A) {4, 8, 12, 16, ...} B) {0, 4, 8, 12, 16} C) {..., –8, –4, 0, 4, 8, ...} D) {0, 4, 8, 12, 16, ...}

Answer: D

20) {a | a is a counting number multiple of 4}

A) {0, 4, 8, 12, 16, ...} B) {4, 8, 12, 16} C) {..., –8, –4, 0, 4, 8, ...} D) {4, 8, 12, 16, ...}

Answer: D

21) {a | a is a natural number greater than 14}

A) {14, 28, 42, ...} B) {15, 17, 19, ...} C) {14, 15, 16, ...} D) {15, 16, 17, ...}

Answer: D

Use these sets to find the following.

22) Let U = {7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17}, M = {7, 9, 11, 13}, N = {8, 10, 12, 14, 16}, Q = {7, 9, 11, 13, 15, 17}, and R = {7, 8, 9, 10}.

$M \cap R$

A) {7, 8, 9, 10} B) {7, 9}

C) {7, 8, 9, 10, 11, 13} D) ∅; M and R are disjoint sets.

Answer: B

23) Let U = {5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}, M = {5, 7, 9, 11}, N = {6, 8, 10, 12, 14}, Q = {5, 7, 9, 11, 13, 15}, and R = {5, 6, 7, 8}.

$M \cup N$

A) {5, 6, 7, 8, 9, 10, 14} B) ∅; M and N are disjoint sets.

C) {5, 6, 7, 8, 9, 10, 11, 12, 14} D) {6, 7, 8, 9, 10, 11, 12, 13, 14}

Answer: C

24) Let U = {3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13}, M = {3, 5, 7, 9}, N = {4, 6, 8, 10, 12}, Q = {3, 5, 7, 9, 11, 13}, and R = {3, 4, 5, 6}.

$M \cap N$

A) {5, 6, 7, 8, 12} B) {4, 5, 6, 7, 8, 9, 10, 11, 12}

C) ∅; M and N are disjoint sets. D) {3, 4, 5, 6, 7, 8, 9, 10, 12}

Answer: C

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Give the additive inverse of the number.

25) 29

A) 29 B) –29 C) 0 D) $\frac{1}{29}$

Answer: B

26) –24

A) –24 B) 24 C) 0 D) $-\frac{1}{24}$

Answer: B

27) –(–12)

A) 12 B) –12 C) 0 D) $-\frac{1}{12}$

Answer: B

28) $\frac{6}{7}$

A) $\frac{7}{6}$ B) $-\frac{6}{7}$ C) $\frac{6}{7}$ D) $-\frac{7}{6}$

Answer: B

29) 0

A) 1 B) $\frac{1}{0}$ C) 0 D) Does not exist

Answer: C

30) 0.74

A) $\frac{37}{50}$ B) –0.74 C) $\frac{1}{74}$ D) 0.74

Answer: B

Find the value of the expression.

31) $|-2|$

A) –2 B) 0 C) 2 D) ±2

Answer: C

32) $\left|\frac{1}{9}\right|$

A) – 9 B) $\frac{1}{9}$ C) $-\frac{1}{9}$ D) 9

Answer: B

33) $|-9.3|$

A) 9.3 B) –9.3 C) 0 D) 18.6

Answer: A

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34) $-|-20|$

A) 20 B) 4.472 C) 0 D) –20

Answer: D

35) $-|-17|$

A) 17 B) 4.123 C) –17 D) 0

Answer: C

Write the set using set–builder notation.

36) {2, 4, 6, 8, 10}

A) {2, 4, 6, 8}

B) {x|x is an even natural number less than or equal to 10}

C) {x|x is any even natural number}

D) {x|x is any integer}

Answer: B

37) {18, 19, 20, 21}

A) {x|x is a natural number between 17 and 22} B) {x|x is an integer less than 22}

C) {x|x is a natural number between 18 and 21} D) {18, 19, 20, 21}

Answer: A

38) {–6, –5, –4, –3, . . .}

A) {x|x is an integer greater than –7} B) {x|x is any integer}

C) {x|x is an integer between –7 and –2} D) {–6, –5, –4, –3}

Answer: A

39) {. . ., –3, –2, –1, 0, 1, 2, 3, . . . }

A) {x|x is any integer greater than –3} B) {x|x is an integer}

C) {–3, –2, –1, 0, 1, 2, 3} D) {x|x is a natural number}

Answer: B

40) {–4, –3, –2, –1, 0}

A) {x|x is an integer between –5 and 1} B) {x|x is a natural number between –5 and 1}

C) {x|x is a number between –4 and 0} D) {x|x is an integer between –4 and 0}

Answer: A

41) {8, 9, 10, 11, 12}

A) {x|x is an irrational number between 7 and 13} B) {x|x is an integer between 8 and 12}

C) {x|x is a number between 8 and 12} D) {x|x is an integer between 7 and 13}

Answer: D

Mark the statement as true or false.

42) Every whole number is a real number.

A) True B) False

Answer: A

43) Some rational numbers are irrational.

A) True B) False

Answer: B

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44) Some rational numbers are integers.
A) True B) False
Answer: A

45) Every integer is an irrational number.
A) True B) False
Answer: B

46) The absolute value of any number is positive.
A) True B) False
Answer: B

47) Some real numbers are integers.
A) True B) False
Answer: A

48) The absolute value of any nonzero number is positive.
A) True B) False
Answer: A

49) The absolute value of any nonzero number is an irrational number.
A) True B) False
Answer: B

50) The number zero has no additive inverse.
A) True B) False
Answer: B

51) Division of zero by a nonzero number is undefined.
A) True B) False
Answer: B

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The NSC (Not So Consistent) Corporation has just completed its first year of business. The following chart shows its monthly profit (or loss).

Month	Profit (Loss) in Dollars
January	**–14,526**
February	**1874**
March	**–8977**
April	**–14,107**
May	**14,073**
June	**14,632**
July	**–13,834**
August	**–13,170**
September	**–4860**
October	**6630**
November	**–3338**
December	**–974**

52) The loss was greatest in
A) June B) December C) January D) November
Answer: C

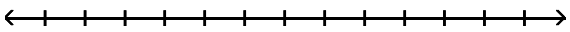
53) The loss with the greatest absolute value occurred in
A) January B) June C) February D) December
Answer: A

54) List the months in which a profit was made in order from least profitable month to most profitable month.
A) June, May, October, February B) December, February, November, September
C) February, October, May, June D) September, November, February, December
Answer: C

55) The absolute value of the profit or loss was greatest in
A) February B) December C) January D) June
Answer: D

56) The absolute value of the profit or loss was smallest in
A) December B) January C) February D) June
Answer: A

Use a number line to answer true or false to the statement.



57) $8 > 23$
A) True B) False
Answer: B

58) $-17 \leq -8$
A) True B) False
Answer: A

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59) $-6 < 0$
A) True B) False
Answer: A

60) $10 < -6$
A) True B) False
Answer: B

61) $11 > -10$
A) True B) False
Answer: A

62) $-18 \leq 22$
A) True B) False
Answer: A

63) $-25 > -7$
A) True B) False
Answer: B

64) $-2 \geq 24$
A) True B) False
Answer: B

Rewrite the statement so the inequality symbol points in the opposite direction.

65) $21 < 36$
A) $21 > 36$ B) $36 \geq 21$ C) $36 < 21$ D) $36 > 21$
Answer: D

66) $48 > 38$
A) $38 < 48$ B) $48 \geq 38$ C) $38 > 48$ D) $48 < 38$
Answer: A

67) $33 \geq 1$
A) $33 > 1$ B) $33 \leq 1$ C) $1 \geq 33$ D) $1 \leq 33$
Answer: D

68) $10 \leq 35$
A) $35 > 10$ B) $35 \geq 10$ C) $35 \leq 10$ D) $10 \geq 35$
Answer: B

69) $-13 < 37$
A) $-37 > 13$ B) $37 < -13$ C) $37 > 13$ D) $37 > -13$
Answer: D

70) $-33 > -37$
A) $-37 > -33$ B) $37 < 33$ C) $-37 < -33$ D) $33 > 37$
Answer: C

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71) $-30 < x$

A) $x < -30$ B) $x < 30$ C) $x > 30$ D) $x > -30$

Answer: D

Use inequality symbols to rewrite the statement.

72) –1 is greater than y.

A) $-1 < y$ B) $-1 \geq y$ C) $-1 > y$ D) $-1 \leq y$

Answer: C

73) 2 is greater than or equal to y.

A) $2 < y$ B) $2 \geq y$ C) $2 > y$ D) $2 \leq y$

Answer: B

74) 4 is greater than or equal to 4.

A) $4 > 4$ B) $4 < 4$ C) $4 \leq 4$ D) $4 \geq 4$

Answer: D

75) $5x - 6$ is greater than or equal to 7.

A) $5x - 6 > 7$ B) $5x - 6 < 7$ C) $5x - 6 \geq 7$ D) $5x - 6 \leq 7$

Answer: C

76) $6x - 1$ is equal to –1.

A) $6x - 1 > -1$ B) $6x - 1 \leq -1$ C) $6x - 1 = -1$ D) $6x - 1 \neq -1$

Answer: C

77) x is between 11 and 14.

A) $11 < x < 14$ B) $11 \leq x < 14$ C) $11 < x \leq 14$ D) $11 > x > 14$

Answer: A

78) x is between –10 and 11, excluding –10 and including 11.

A) $-10 \leq x < 11$ B) $-10 \leq x \leq 11$ C) $-10 < x \leq 11$ D) $-10 < x < 11$

Answer: C

79) x is between –10 and 6, including –10 and 6.

A) $-10 < x \leq 6$ B) $-10 < x < 6$ C) $-10 \leq x \leq 6$ D) $-10 \leq x < 6$

Answer: C

Determine whether the inequality is true or false.

80) $-10 \leq 6 + 9$

A) True B) False

Answer: A

81) $7 + 7 \leq 3 \cdot 6$

A) True B) False

Answer: A

82) $3 \cdot 8 \leq 11 + 12$

A) True B) False

Answer: B

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83) $|-4| \geq -|4|$

A) True B) False

Answer: A

84) $19 \cdot |-13| < 7 + |18|$

A) True B) False

Answer: B

85) $-40 \geq -|-8|$

A) True B) False

Answer: B

Decide whether the statement is true or false. If false, correct the statement so it is true.

86) $|7 - 8| = |7| - |8|$

A) True B) False; $|7 - 8| = |8| - |7|$

Answer: B

87) $|5 - 9| = |9| - |5|$

A) True B) False; $|5 - 9| = |5| - |9|$

Answer: A

88) $|-12| = -|12|$

A) True B) False; $|-12| = -(-12) = 12$

Answer: B

89) $|-8| = |8|$

A) True B) False; $|-8| = -|8| = -8$

Answer: A

90) $\left|(-11)^3\right| = -\left|(11)^3\right|$

A) True B) False; $\left|(-11)^3\right| = 11^3$

Answer: B

91) $\dfrac{|-1|}{|5|} = \left|\dfrac{-1}{5}\right|$

A) True B) False; $\dfrac{|-1|}{|5|} = \left|\dfrac{1}{-5}\right|$

Answer: A

92) $|-3 \cdot 12| = |-3| \cdot |12|$

A) True B) False; $|-3 \cdot 12| = -|3| \cdot |12|$

Answer: A

Evaluate the expression.

93) $|-13|$

A) 0 B) ±13 C) −13 D) 13

Answer: D

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94) $|2|$

A) ± 2 B) -2 C) 0 D) 2

Answer: D

95) $-|19|$

A) ± 19 B) -19 C) 19 D) 0

Answer: B

96) $-|-3|$

A) ± 3 B) -3 C) 3 D) 0

Answer: B

97) $-\left|\frac{4}{5}\right|$

A) $-\frac{4}{5}$ B) $\frac{4}{5}$ C) 0 D) $\pm\frac{4}{5}$

Answer: A

98) $-\left|-\frac{4}{3}\right|$

A) $\frac{4}{3}$ B) $-\frac{4}{3}$ C) $\pm\frac{4}{3}$ D) 0

Answer: B

99) $\left|-\frac{10}{7}\right|$

A) $-\frac{10}{7}$ B) 0 C) $\frac{10}{7}$ D) $\pm\frac{10}{7}$

Answer: C

100) Let $x = -25$, $y = 10$. Evaluate $|-18x|$.

A) -250 B) 450 C) 250 D) -450

Answer: B

101) Let $x = -5$, $y = 8$. Evaluate $|x - y|$.

A) -13 B) 3 C) -3 D) 13

Answer: D

102) Let $x = -3$, $y = 4$. Evaluate $|x| + |y|$.

A) 7 B) 1 C) -7 D) -1

Answer: A

103) Let $x = -8$, $y = 10$. Evaluate $|y - x|$.

A) 2 B) -2 C) 18 D) -18

Answer: C

104) Let $x = 3$, $y = 9$. Evaluate $|6x - 7y|$.

A) -45 B) 81 C) 45 D) -81

Answer: C

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105) Let $x = 1$, $y = 3$. Evaluate $|2y - 8x|$.

A) -14 B) -2 C) 14 D) 2

Answer: D

106) Let $x = 6$, $y = -7$. Evaluate $4|x| + 5|y|$.

A) 11 B) -11 C) 59 D) -59

Answer: C

107) Let $x = -8$, $y = 21$.
Evaluate $|-8y - 5x| - |8y|$.

A) 127 B) -40 C) 337 D) 1

Answer: B

108) Let $x = 2$ and $y = -1$. Evaluate $\frac{|x|}{x} + \frac{|y|}{y}$.

A) 2 B) 1 C) -1 D) 0

Answer: D

109) Let $x = 4$, $y = 5$. Evaluate $\frac{|x - 2| - |-2y|}{|-2y + 4x|}$.

A) 2 B) $-\frac{4}{3}$ C) $-\frac{2}{3}$ D) $-\frac{4}{13}$

Answer: B

Determine which property of absolute value justifies the statement.

110) $|x| \geq 0$

A) Property 1: the absolute value of a number is positive.
B) Property 5: the triangle inequality
C) Property 1: the absolute value of a number is positive or 0.
D) Property 1: the absolute value of a number is greater than 0.

Answer: C

111) $|-x| = |x|$

A) Property 5: the triangle inequality
B) Property 1: the opposite of a number is equal to the absolute value of the number .
C) Property 2: the opposite of the absolute value of a number is equal to the absolute value of the number.
D) Property 2: the absolute value of a number and its opposite are equal.

Answer: D

112) $|x + y| \leq |x| + |y|$

A) Property 4: the sum of two numbers is less than or equal to the absolute value of the sum of the numbers.
B) Property 4: the absolute value of the sum of the numbers is less than or equal to the sum of the two numbers.
C) Property 5: the absolute value of the sum of two numbers is less than or equal to the sum of their absolute values (the triangle inequality).
D) Property 5: the sum of the absolute values of two numbers is less than or equal to the absolute value of their sum (the triangle inequality).

Answer: C

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Find the distance between two points given their coordinates.

113) Find the distance between points P and Q on a number line, with coordinates 3 and 10, respectively.
A) d(P, Q) = –7 B) d(P, Q) = 13 C) d(P, Q) = –13 D) d(P, Q) = 7
Answer: D

114) Find the distance between points R and S on a number line, with coordinates –3 and 10, respectively.
A) d(R, S) = –13 B) d(R, S) = –7 C) d(R, S) = 7 D) d(R, S) = 13
Answer: D

115) Find the distance between points P and Q on a number line, with coordinates –4 and 2, respectively.
A) d(P, Q) = 2 B) d(P, Q) = –2 C) d(P, Q) = –6 D) d(P, Q) = 6
Answer: D

116) Find the distance between points R and S on a number line, with coordinates 10 and –3, respectively.
A) d(R, S) = –7 B) d(R, S) = 7 C) d(R, S) = –13 D) d(R, S) = 13
Answer: D

117) Find the distance between points P and Q on a number line, with coordinates 6 and –11, respectively.
A) d(P, Q) = 17 B) d(P, Q) = –5 C) d(P, Q) = –17 D) d(P, Q) = 5
Answer: A

118) Find the distance between points R and S on a number line, with coordinates –5 and –12, respectively.
A) d(R, S) = 7 B) d(R, S) = 17 C) d(R, S) = –7 D) d(R, S) = –17
Answer: A

Add or subtract as indicated.

119) 8 + (–3)
A) –5 B) 11 C) 5 D) –11
Answer: C

120) –3 + 14
A) –17 B) 11 C) –11 D) 17
Answer: B

121) –24 + (–8)
A) –32 B) –16 C) 16 D) 32
Answer: A

122) –62 + 40
A) 102 B) 22 C) –102 D) –22
Answer: D

123) –9 + 27
A) –18 B) 18 C) 36 D) –36
Answer: B

124) –10 – 15
A) –25 B) 5 C) –5 D) 25
Answer: A

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125) 64 – (–15)
A) –79 B) 79 C) 49 D) –49
Answer: B

126) 9 – (–29)
A) –38 B) 38 C) 20 D) –20
Answer: B

127) –9 – (–25)
A) 16 B) –34 C) –16 D) 34
Answer: A

128) 12 – (–3)
A) –9 B) 15 C) –15 D) 9
Answer: B

Perform the indicated operation.

129) $\left(-\frac{1}{2}\right)+\left(-\frac{5}{8}\right)$
A) $-\frac{9}{8}$ B) $\frac{1}{4}$ C) $\frac{9}{8}$ D) $-\frac{1}{2}$
Answer: A

130) $\left(\frac{3}{4}\right)+\left(-\frac{4}{7}\right)$
A) – 1 B) $-\frac{1}{4}$ C) $\frac{5}{28}$ D) $-\frac{5}{28}$
Answer: C

131) $\left(\frac{3}{5}\right)-\left(-\frac{1}{20}\right)$
A) $\frac{1}{25}$ B) $\frac{13}{20}$ C) $-\frac{1}{5}$ D) $-\frac{13}{20}$
Answer: B

132) $\left(\frac{5}{7}\right)-\left(-\frac{8}{63}\right)$
A) $-\frac{13}{63}$ B) $\frac{13}{441}$ C) $\frac{53}{63}$ D) $-\frac{53}{63}$
Answer: C

133) (–0.01) – (–0.32)
A) 0.31 B) 0.43 C) 0.0032 D) 0.33
Answer: A

134) 0.89 – (–0.84)
A) 1.73 B) 0.7476 C) 1.83 D) 0.05
Answer: A

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135) (–3.4) + (–3.7)
A) –0.3 B) –7.1 C) 12.58 D) 0.3
Answer: B

136) 0.33 + (–5.714)
A) –6.044 B) 1.886 C) –5.944 D) –5.384
Answer: D

137) 4.270 + (–3.843)
A) –8.113 B) –8.013 C) 16.410 D) 0.427
Answer: D

138) –4.39 + (–6.84)
A) –11.23 B) 30.028 C) –2.45 D) 11.23
Answer: A

139) 7.154 – (–0.37)
A) 7.624 B) 7.524 C) 2.647 D) 6.784
Answer: B

Add or subtract as indicated.

140) |–19 – 15|
A) 4 B) –34 C) –4 D) 34
Answer: D

141) |17 + 11|
A) 6 B) 28 C) –28 D) –6
Answer: B

142) |19| – |16|
A) 35 B) –3 C) –35 D) 3
Answer: D

143) |18| + |15|
A) –3 B) 3 C) –33 D) 33
Answer: D

144) –|2| + |7|
A) 9 B) –5 C) –9 D) 5
Answer: D

145) |–9 – 2|
A) 7 B) –11 C) 11 D) –7
Answer: C

146) |1 + 9|
A) 8 B) –8 C) –10 D) 10
Answer: D

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147) $1 - |-7|$

A) –8 B) 6 C) 8 D) –6

Answer: D

148) $|1| + |8|$

A) –7 B) –9 C) 9 D) 7

Answer: C

Perform the indicated operation.

149) $-9(-10)$

A) –90 B) 80 C) 100 D) 90

Answer: D

150) $3(-3)$

A) 9 B) 19 C) –19 D) –9

Answer: D

151) $\frac{-64}{-4}$

A) 6 B) $\frac{1}{16}$ C) 16 D) –16

Answer: C

152) $\frac{8}{0}$

A) Undefined B) 8 C) 0 D) 1

Answer: A

153) $\frac{-198}{9}$

A) –22 B) $-\frac{1}{22}$ C) $\frac{1}{22}$ D) 22

Answer: A

154) $\frac{120}{-4}$

A) $-\frac{1}{30}$ B) –30 C) 30 D) $\frac{1}{30}$

Answer: B

155) $\frac{0}{9}$

A) 9 B) –9 C) Undefined D) 0

Answer: D

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156) $12\left(-\frac{9}{20}\right)$

A) $\frac{27}{5}$ B) $-\frac{27}{5}$ C) $-\frac{5}{27}$ D) $\frac{5}{27}$

Answer: B

157) $-15\left(-\frac{25}{6}\right)$

A) $-\frac{2}{125}$ B) $\frac{125}{2}$ C) $\frac{2}{125}$ D) $-\frac{125}{2}$

Answer: B

158) $\frac{9}{14}(-6)$

A) $\frac{7}{27}$ B) $-\frac{27}{7}$ C) $\frac{27}{7}$ D) $-\frac{7}{27}$

Answer: B

159) $\frac{4}{7}\left(-\frac{7}{20}\right)$

A) $\frac{129}{140}$ B) $\frac{1}{5}$ C) $-\frac{1}{5}$ D) $-\frac{129}{140}$

Answer: C

160) $-\frac{2}{3}\left(-\frac{11}{14}\right)$

A) $\frac{61}{42}$ B) $\frac{11}{21}$ C) $-\frac{61}{42}$ D) $-\frac{11}{21}$

Answer: B

161) $-\frac{1}{8}\left(\frac{1}{10}\right)\left(-\frac{7}{15}\right)$

A) $\frac{1}{640}$ B) $-\frac{7}{1200}$ C) $\frac{7}{1200}$ D) $-\frac{1}{640}$

Answer: C

162) $15 \div \left(-\frac{24}{25}\right)$

A) $-\frac{125}{8}$ B) $-\frac{8}{125}$ C) $\frac{125}{8}$ D) $\frac{8}{125}$

Answer: A

163) $-\frac{9}{11} \div \left(-\frac{4}{7}\right)$

A) $-\frac{63}{44}$ B) $\frac{63}{44}$ C) $-\frac{44}{63}$ D) $\frac{36}{77}$

Answer: B

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164) $\dfrac{-\frac{25}{14}}{\frac{1}{10}}$

A) $-\frac{7}{125}$ B) $-\frac{125}{7}$ C) $\frac{7}{125}$ D) $\frac{125}{7}$

Answer: B

Evaluate the expression.

165) 3^4

A) 144 B) 81 C) 12 D) 8.1

Answer: B

166) -3^6

A) 18 B) −18 C) 729 D) −729

Answer: D

167) $(-2)^4$

A) 64 B) −16 C) 16 D) −8

Answer: C

168) $-4 \cdot 5^2$

A) 100 B) 400 C) −100 D) −400

Answer: C

169) $-5(-3)^3$

A) −3,375 B) 3,375 C) −135 D) 135

Answer: D

170) $27 + 10 \cdot 24 + 2$

A) 962 B) 269 C) 63 D) 890

Answer: B

171) $5 + 2^2 - (-5) \cdot 4$

A) 29 B) −11 C) 16 D) 56

Answer: A

172) $92 - 4 \cdot 22 + 6$

A) 1942 B) 116 C) 10 D) 2464

Answer: C

173) $91 - 11 \cdot 5 + 68 \div (-17)$

A) −9 B) −344 C) 396 D) 32

Answer: D

174) $(-4)^3 - (-4)^2$

A) 80 B) 48 C) −80 D) −48

Answer: C

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175) $(5 + (-4))[8 + (7 + 6)]$

A) 85 B) 18 C) 22 D) 21

Answer: D

176) $-2[6 + 9(-1 - 1)]$

A) 60 B) 56 C) −30 D) 24

Answer: D

177) $(3 - 5^2)(-6 + \sqrt{16})$

A) 44 B) −38 C) −484 D) −20

Answer: A

178) $\left[-\frac{5}{27} - \left(-\frac{5}{6}\right)\right] - \left(\frac{4}{3} - \frac{1}{18}\right)$

A) $\frac{52}{27}$ B) $-\frac{17}{27}$ C) $\frac{7}{27}$ D) $-\frac{62}{27}$

Answer: B

179) $\frac{7 \cdot 3 + 4 - (-8 - 5)}{7 \cdot 7 + 7}$

A) $\frac{19}{28}$ B) $\frac{8}{7}$ C) $\frac{31}{49}$ D) $\frac{19}{49}$

Answer: A

Evaluate the expression for x = –2, y = 3, and a = –4.

180) $9x + 7y - 7a$

A) −1 B) 41 C) 31 D) −67

Answer: C

181) $-7a - 3y - 4x$

A) 27 B) 14 C) 22 D) −11

Answer: A

182) $(-6x - 9y)(-3a)$

A) 180 B) −180 C) 0 D) −504

Answer: B

183) $5x^2 - 7y - a$

A) 3 B) 0 C) −3 D) 1

Answer: A

184) $x^3 - 6y + 9a$

A) −46 B) −58 C) −62 D) −49

Answer: C

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185) $\frac{y + 2x}{y - 3a}$

A) $-\frac{1}{19}$ B) $-\frac{1}{15}$ C) 0 D) $-\frac{1}{5}$

Answer: B

186) $\frac{\frac{9}{y} - \frac{a}{2}}{\frac{x}{2} + \frac{6}{y}}$

A) $\frac{5}{2}$ B) 6 C) 1 D) 5

Answer: D

187) $\frac{-(x + 4)^2 - 7y}{-2 - a}$

A) $\frac{17}{2}$ B) $-\frac{25}{2}$ C) $\frac{25}{2}$ D) $\frac{7}{2}$

Answer: B

188) $\frac{2x + 2(1 + a)^2}{y - 1}$

A) 17 B) – 5 C) 7 D) 9

Answer: C

Identify the property illustrated by the statement. Assume all variables represent real numbers.

189) $5 \cdot 1 = 5$

A) Closure B) Inverse C) Identity D) Distributive

Answer: C

190) $(9 + 4) + 4 = (4 + 9) + 4$

A) Distributive B) Commutative C) Closure D) Associative

Answer: B

191) $8 + 0 = 8$

A) Associative B) Inverse C) Closure D) Identity

Answer: D

192) $8(x + 3) = 8x + 24$

A) Distributive B) Associative C) Closure D) Commutative

Answer: A

193) $5 + (-5) = 0$

A) Identity B) Closure C) Associative D) Inverse

Answer: D

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194) $3 + 8 = 8 + 3$

A) Identity B) Inverse C) Commutative D) Associative

Answer: C

195) $\frac{1}{(a+3)} \cdot (a+3) = 1$, if $a + 3 \neq 0$

A) Inverse B) Identity C) Closure D) Distributive

Answer: A

196) $(7 \cdot 6) \cdot 9 = 7 \cdot (6 \cdot 9)$

A) Identity B) Commutative C) Distributive D) Associative

Answer: D

197) $5(\pi)$ is a real number.

A) Associative B) Distributive C) Identity D) Closure

Answer: D

Write the expression with only positive exponents and evaluate if possible. Assume all variables represent nonzero real numbers.

198) $\frac{5}{3}(-12y)$

A) 15y B) 20y C) 8y D) –20y

Answer: D

199) $\left(\frac{4}{3}y\right)(-6)$

A) 8y B) 12y C) 7y D) –8y

Answer: D

200) $-\frac{5}{2}(-8y + 8x - 6z)$

A) $20y - 20x + 15z$ B) $20y - 20x - 15z$ C) $20y + 20x - 15z$ D) $20y + 20x + 15z$

Answer: A

201) $-\frac{2}{5}\left(-\frac{5}{4}y + \frac{5}{4}x - \frac{15}{2}\right)$

A) $\frac{1}{2}y + \frac{1}{2}x - 3$ B) $\frac{1}{2}y + \frac{1}{2}x + 3$ C) $\frac{1}{2}y - \frac{1}{2}x - 3$ D) $\frac{1}{2}y - \frac{1}{2}x + 3$

Answer: D

Use the distributive property to rewrite a sum as a product or the product as a sum.

202) $3b - 20b$

A) –23b B) 23b C) –17b D) 17b

Answer: C

203) $15 - 25r$

A) $5(3 - 5r)$ B) $5(3 - 8r)$ C) –10r D) 40r

Answer: A

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204) $-8(y + a)$

A) $-8y + 8a$ B) $-8y - 8a$ C) $-8y + a$ D) $-8ya$

Answer: B

205) $-(4 + 8k)$

A) $-4 - 8k$ B) $4 - 8k$ C) $4 + 8k$ D) $-4 + 8k$

Answer: A

206) $-(-7k - 5r)$

A) $7k - 5r$ B) $-7k + 5r$ C) $7k + 5r$ D) $-7k - 5r$

Answer: C

Determine what signs on values of x and y would make the statement true. Assume that x and y are not 0.

207) $xy > 0$

A) x and y have the same sign.
B) x and y must be negative.
C) x and y have different signs.
D) x and y must be positive.

Answer: A

208) $\frac{x}{y} < 0$

A) x and y have the same sign.
B) x and y must be positive.
C) x and y have different signs.
D) x and y must be negative.

Answer: C

209) $-\frac{x}{y} < 0$

A) x and y have the same sign.
B) x and y must be positive.
C) x and y must be negative.
D) x and y have different signs.

Answer: A

210) $x^2y > 0$

A) x and y must be positive.
B) y must be positive.
C) x and y have the same sign.
D) x must be positive.

Answer: B

211) $\frac{x^2}{y} > 0$

A) y must be positive.
B) x must be positive.
C) x and y have the same sign.
D) x and y must be positive.

Answer: A

212) $\frac{x^3}{y} < 0$

A) x and y have different signs.
B) x and y must be negative.
C) x and y must be positive.
D) x and y have the same sign.

Answer: A

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Solve the problem.

213) The formula $C = \frac{5}{9}(F - 32)$ expresses the relationship between Fahrenheit temperature, F, and Celsius temperature, C. Use the formula to convert 95°F to its equivalent temperature on the Celsius scale.

A) 7°C B) 113°C C) 71°C D) 35°C

Answer: D

214) A stone is dropped from a tower that is 820 feet high. The formula $h = 820 - 16t^2$ describes the stone's height above the ground, h, in feet, t seconds after it was dropped. What is the stone's height 4 seconds after it is released?

A) 574 ft B) 589 ft C) 539 ft D) 564 ft

Answer: D

215) If a rock falls from a height of 50 meters above the ground, the height H (in meters) after x seconds can be approximated using the formula $H = 50 - 4.9x^2$. What is the height of the rock after 3 seconds?

A) 405.9 m B) 35.3 m C) −166.09 m D) 5.9 m

Answer: D

216) As the relative humidity increases, the temperature seems higher than it is. The formula $T = 0.115x + 87.16$ approximates the apparent temperature for an actual temperature of 95°F, where x is the relative humidity. What is the apparent temperature (to the nearest degree) for a relative humidity of 30%?

A) 301°F B) 91°F C) 117°F D) 87°F

Answer: B

217) Use the formula

$$\text{Passing Rating} \approx 85.68\left(\frac{C}{A}\right) + 4.31\left(\frac{Y}{A}\right) + 326.42\left(\frac{T}{A}\right) - 419.07\left(\frac{I}{A}\right),$$

where A = number of passes attempted, C= number of passes completed, Y = total number of yards gained passing, T = number of touchdown passes, and I = number of interceptions, to approximate the passing rating for C. Felix. Round to the nearest tenth.

Quarterback	A	C	Y	T	I
A. Smith	436	248	3016	22	7
B. Jones	454	257	3168	26	14
C. Felix	556	321	4346	23	13

A) 86.9 B) 87.2 C) 88.3 D) 84.3

Answer: A

218) The Blood Alcohol Concentration (BAC) of a person who has been drinking is given by the expression

number of oz × % alcohol × .075 ÷ body weight in lb − hours of drinking × .015.

Find the BAC to the nearest thousandth for a 148−lb woman, who, in 2 hours, has drunk 2 10−oz beers (20 oz), each having a 4.5% alcohol content.

A) −0.007 B) −0.141 C) −133.288 D) 0.016

Answer: D

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219) The NSC (Not So Consistent) Corporation has just completed its first year of business. The following chart shows its monthly profit (or loss).

Month	Profit (Loss) in Dollars
January	–14,526
February	1874
March	–8977
April	–14,107
May	14,073
June	14,632
July	–13,834
August	–13,170
September	–4860
October	6630
November	–3338
December	–974

The profit was greatest in ___?___ .

A) January B) December C) June D) February

Answer: C

220) The NSC Corporation has just completed its first year of business. The following chart shows its monthly profit (or loss).

Month	Profit (Loss) in Dollars
January	–14,526
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April	–14,107
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June	14,632
July	–13,834
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September	–4860
October	6630
November	–3338
December	–974

The absolute value of the profit or loss was greatest in ___?___ .

A) June B) February C) January D) December

Answer: A

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221) During a certain football game, a player gained 91 yards rushing and –64 yards returning fumbles. Find his total yardage. Is this the same as the sum of the absolute values of the two categories? Why or why not?

A) 27 yards; Yes, it is the same.
B) 27 yards; No, it is not the same because the sum of the absolute values is 155.
C) –27; yards; No, it is not the same because the sum of the absolute values is –155.
D) 155 yards; No, it is not the same because the sum of the absolute values is 27 .

Answer: B

222) Find the magnitude of the difference between a windchill factor of –57 and a windchill factor of –23.

A) 34 B) 80 C) –34 D) –80

Answer: A

223) Find the magnitude of the difference between a windchill factor of 26 and a windchill factor of –54.

A) –28 B) 28 C) 80 D) –80

Answer: C

224) It is recommended that a woman who is pregnant should exercise such that her heart rate does not exceed 140 beats per minute. Use absolute value notation to write an expression that describes the difference between the heart rate achieved by each of the following pregnant women and the recommended maximum heart rate. Then evaluate that expression.

(i) Abigail: 137 beats per minute
(ii) Mathilda: 146 beats per minute

A) (i) Abigail: $|137 + 140| = 277$
(ii) Mathilda: $|146 + 140| = 286$

B) (i) Abigail: $|137 - 140| = 3$
(ii) Mathilda: $|146 - 140| = 6$

C) (i) Abigail: $|140 - 137| = -3$
(ii) Mathilda: $|140 - 146| = -6$

D) (i) Abigail: $137 - 140 = -3$
(i) Mathilda: $146 - 140 = 6$

Answer: B

Factor the polynomial.

225) $15x^4 + 22x^2 + 8$

A) $(3x^2 + 2)(5x^2 + 4)$ B) $(15x^2 + 2)(x^2 + 4)$ C) $(5x^2 - 4)(3x^2 - 2)$ D) $(3x^2 + 1)(5x^2 + 8)$

Answer: A

226) $12z^6 - 7z^3 - 12$

A) $(4z^3 + 1)(3z^3 - 12)$ B) $12(z^3 - 4)(z^3 + 3)$ C) $(4z^3 + 3)(3z^3 - 4)$ D) $(3z^3 + 4)(4z^3 - 3)$

Answer: C

227) $15z^4 - 4z^2 - 4$

A) $(5z^2 + 2)(3z^2 - 2)$ B) $(3z^4 + 2)(5z - 2)$ C) $(5z^4 + 2)(3z - 2)$ D) $(3z^2 + 2)(5z^2 - 2)$

Answer: A

228) $20(m - 3)^2 - 11(m - 3) - 3$

A) $(4m + 3)(5m + 1)$ B) $(4m - 15)(5m - 14)$ C) $(4m + 13)(5m + 18)$ D) $(4m + 6)(5m + 4)$

Answer: B

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229) $25x^2 + 10x + 1 - y^2$

A) $(5x + 1 + y)(5x - 1 - y)$ B) $(5x - 1 + y)(5x - 1 - y)$

C) $(5x + 1 + y)(5x + 1 - y)$ D) Prime

Answer: C

230) $(r - s)^2 + 2(r - s) + 1$

A) $(r - s + 1)(r - s - 1)$ B) $(r - s + 1)(r - s)$ C) $(r - s + 1)^2$ D) Prime

Answer: C

231) $4y^2 + 8y + 9$

A) $(2y - 3)^2$ B) $(2y + 3)^2$ C) $(2y + 3)(2y - 3)$ D) Does not factor

Answer: D

232) $100k^2 - 81m^2$

A) $(10k + 9m)^2$ B) $(100k + m)(k - 81m)$

C) $(10k - 9m)^2$ D) $(10k + 9m)(10k - 9m)$

Answer: D

233) $8a^3 - 27b^3$

A) $(2a + 3b^2)(4a^2 - 6ab + 9b^2)$ B) $(2a - 3b)(4a^2 + 9b^2)$

C) $(8a - 3b)(a^2 + 6ab + 9b^2)$ D) $(2a - 3b)(4a^2 + 6ab + 9b^2)$

Answer: D

234) $21(3p - 4)^2 - 10(3p - 4) + 1$

A) $(21p - 41)(8p - 13)$ B) $(21p + 29)(9p - 12)$ C) $(20p - 29)(2p - 13)$ D) $(21p - 29)(9p - 13)$

Answer: D

Simplify the expression. Assume all variables represent nonzero real numbers.

235) $(6a^5) \cdot (7a^6)$

A) $42a^{11}$ B) 13^{11} C) $42a^{30}$ D) 13^{30}

Answer: A

236) $(2n^4) \cdot (5n^5)$

A) $10n^9$ B) $7n^{20}$ C) $7n^9$ D) $10n^{20}$

Answer: A

237) $4^6 \cdot 4^8$

A) 16^{48} B) 4^{14} C) 4^{48} D) 8^{14}

Answer: B

238) $x^{10} \cdot x^9$

A) x^{19} B) $(2x)^{90}$ C) x^{90} D) $(2x)^{19}$

Answer: A

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239) $3^3 \cdot 3^2$

A) 9^6 B) 3^6 C) 6^5 D) 3^5

Answer: D

240) $(2a^8b^2)(-3a^7b^3)$

A) $6a^{15}b^6$ B) $-6a^{15}b^5$ C) $-6a^{56}b^6$ D) $6a^{55}b^6$

Answer: B

241) $(-8x^5y)(-9x^2y^6)$

A) $-72x^7y^6$ B) $72x^{10}y^6$ C) $72x^7y^7$ D) $-17x^7y^6$

Answer: C

242) $(-2t^5)(4t^2)(-3t^6)$

A) $-1t^{11}$ B) $-1t^{13}$ C) $24t^{14}$ D) $24t^{13}$

Answer: D

243) $\left(\frac{3x^2y^2}{z^4}\right)^4$

A) $\frac{3x^8y^8}{z^8}$ B) $\frac{3x^8y^8}{z^{16}}$ C) $\frac{81x^6y^6}{z^8}$ D) $\frac{81x^8y^8}{z^{16}}$

Answer: D

244) $-\left(\frac{3x^3}{y^2}\right)^0$

A) -1 B) 1 C) $\frac{243x^{15}}{y^{10}}$ D) $\frac{y^2}{243x^{15}}$

Answer: A

Decide whether the expression has been simplified correctly.

245) $(ab)^2 = ab^2$

A) Simplified correctly B) Not simplified correctly

Answer: B

246) $\left(\frac{x}{9}\right)^4 = \frac{x^4}{9}$

A) Not simplified correctly B) Simplified correctly

Answer: A

247) $3^0x = 0$

A) Not simplified correctly B) Simplified correctly

Answer: A

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248) $2^0x = 2x$

A) Simplified correctly B) Not simplified correctly

Answer: B

249) $3^0x = 1$

A) Not simplified correctly B) Simplified correctly

Answer: A

250) $4^0x = x$

A) Simplified correctly B) Not simplified correctly

Answer: A

251) $x^3 \cdot x^2 = x^5$

A) Simplified correctly B) Not simplified correctly

Answer: A

252) $(x^5)^2 = x^7$

A) Not simplified correctly B) Simplified correctly

Answer: A

253) $x^5 \cdot x^2 = x^{10}$

A) Simplified correctly B) Not simplified correctly

Answer: B

254) $(x^3)^2 = x^6$

A) Simplified correctly B) Not simplified correctly

Answer: A

Simplify the expression. Assume all variables represent nonzero real numbers.

255) $(x^3)^5$

A) x^8 B) x^{15} C) $15x$ D) $5x^3$

Answer: B

256) $(5^5)^5$

A) 5^{10} B) 25^{25} C) 5^{25} D) 25^{10}

Answer: C

257) $(6t)^2$

A) $12t^2$ B) 6^2t C) 6^2t^2 D) $6t^2$

Answer: C

258) $(x^6y^5)^4$

A) $x^{1296}y^{625}$ B) $x^{10}y^9$ C) x^6y^{20} D) $x^{24}y^{20}$

Answer: D

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259) $(10xy)^4$

A) 40xy B) $10{,}000x^4y^4$ C) $40x^4y^4$ D) 10,000xy

Answer: B

260) $(-3x)^3$

A) $9x^3$ B) 27x C) −9x D) $-27x^3$

Answer: D

261) $(-5x)^4$

A) $-625x^4$ B) 20x C) −20x D) $625x^4$

Answer: D

262) $\left(\frac{2}{x}\right)^3$

A) $\frac{8}{x}$ B) $\frac{8}{x^3}$ C) $\frac{2}{x^3}$ D) $8x^3$

Answer: B

263) $\left(\frac{a^4}{b^5}\right)^3$

A) $\frac{a^5}{b^{15}}$ B) $\frac{a^{15}}{b^{12}}$ C) $\frac{a^{12}}{b^5}$ D) $\frac{a^{12}}{b^{15}}$

Answer: D

Write the expression with only positive exponents and evaluate if possible. Assume all variables represent nonzero real numbers.

264) 15^0

A) −1 B) 0 C) 15 D) 1

Answer: D

265) -13^0

A) 0 B) −1 C) 1 D) −13

Answer: B

266) $(-2)^0$

A) −1 B) 1 C) 2 D) 0

Answer: B

267) $-(-8)^0$

A) 8 B) 1 C) 0 D) −1

Answer: D

268) $8x^0$

A) 1 B) 0 C) 8 D) x

Answer: C

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269) $-5x^0$

A) 1 B) -1 C) -5 D) 0

Answer: C

270) $(4x)^0$

A) 4 B) 0 C) 1 D) 4x

Answer: C

271) $(-5x)^0$

A) 0 B) 1 C) -1 D) 5

Answer: B

Simplify the expression. Leave answers with exponents.

272) $(9t)^0$

A) t B) 1 C) 9 D) 9t

Answer: B

273) $(x^4)^2$

A) $2x^4$ B) $8x$ C) x^8 D) x^6

Answer: C

274) $(5^4)^4$

A) 5^8 B) 5^{16} C) 25^8 D) 25^{16}

Answer: B

275) $(6t)^5$

A) 6^5t B) $30t^5$ C) 6^5t^5 D) $6t^5$

Answer: C

276) $(-3x^4y^9)^2$

A) $3^2x^6y^{11}$ B) $(-3)^2x^8y^{18}$ C) $-3x^8y^{18}$ D) $-3^2x^8y^{18}$

Answer: B

277) $(x^5y^3)^4$

A) $x^{20}y^{12}$ B) $x^{625}y^{81}$ C) x^9y^7 D) x^5y^{12}

Answer: A

278) $\left(\frac{m^4}{n^9}\right)^2$

A) $-\frac{m^6}{n^{18}}$ B) $\frac{m^8}{n^{18}}$ C) $\frac{m^6}{n^{11}}$ D) $\frac{n^8}{m^{18}}$

Answer: B

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279) $-\left(\frac{a^4}{b^5}\right)^2$

A) $-\frac{a^5}{b^{10}}$ B) $-\frac{a^8}{b^5}$ C) $-\frac{a^{10}}{b^8}$ D) $-\frac{a^8}{b^{10}}$

Answer: D

Find the sum or difference.

280) $(4a^4 + 2a^3) + (3a^4 + 6a^3)$

A) $15a^{14}$ B) $7a^8 + 8a^6$ C) $7a^4 + 8a^3$ D) $15a^7$

Answer: C

281) $(2n^7 - 6n - 8n^5) + (-6n^5 + 8n^7 - 4n)$

A) $-14n^{13}$ B) $2n^7 - 4n^5 - 12n$ C) $10n^7 - 14n^5 - 10n$ D) $10n - 14n^7 - 10n^5$

Answer: C

282) $(-7 + 6x^7 + 8x^9 - 3x^8) + (5x^8 + 4x^7 + 9 + 8x^9)$

A) $16x^{18} + 2x^{16} + 10x^{14} + 2$ B) $28x^{48} + 2$

C) $-2x^9 - 2x^8 + 17x^7 + 5$ D) $16x^9 + 2x^8 + 10x^7 + 2$

Answer: D

283) $(4x^6 + 9x^8 + 2 - 4x^7) - (-9 + 9x^7 + 6x^8 - 8x^6)$

A) $15x^8 + 5x^7 - 4x^6 + 11$ B) $15x^8 + 5x^7 - 4x^6 - 7$

C) $3x^8 + 5x^7 - 4x^6 - 7$ D) $3x^8 - 13x^7 + 12x^6 + 11$

Answer: D

284) $2(-2r^4 + 9r^3 - 3r) - 3(8r^4 - 9r^3 + 6r^2 - 2r)$

A) $-28r^4 + 18r^3 - 6r^2 - r$ B) $-28r^4 + 6r^2 - 5r$

C) $-28r^4 - 9r^3 + 18r^2 - 12r$ D) $-28r^4 + 45r^3 - 18r^2$

Answer: D

285) $(-6 - 2x^2 + 5x^4 + 8x^3) + (-2x^3 - 2x^2 + 7 + 9x^4)$

A) $16x^{18} + 1$ B) $14x^4 + 6x^3 - 4x^2 + 1$

C) $14x^8 + 6x^6 - 4x^4 + 1$ D) $-8x^4 - 8x^3 + 12x^2 + 17$

Answer: B

286) $(2x^5 + 9x^7 - 7 - 4x^6) - (-9 + 8x^6 + 6x^7 - 8x^5)$

A) $3x^7 - 12x^6 + 10x^5 + 2$ B) $3x^7 + 4x^6 - 6x^5 - 16$

C) $15x^7 + 4x^6 - 6x^5 - 16$ D) $15x^7 + 4x^6 - 6x^5 + 2$

Answer: A

287) $(12x^8 + 13x^7 - 13x^3 + 13) - (8x^8 - 2x^5 + 10x^3 - 2)$

A) $4x^8 + 13x^7 - 2x^5 - 23x^3 + 15$ B) $4x^8 + 13x^7 + 2x^5 - 23x^3 + 15$

C) $-4x^8 + 13x^7 + 2x^5 - 23x^3 + 15$ D) $-4x^8 + 13x^7 - 2x^5 - 23x^3 + 15$

Answer: B

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288) $(7x^4 - 7x^2 + x) - (5x^3 + 3x^2 + 6x) + (3x^2 - x)$

A) $7x^4 - 5x^3 - 5x^2 + 6x$
B) $2x^5 + 7x^4 - 6x$
C) $7x^4 + 5x^3 - 13x^2 - 6x$
D) $7x^4 - 5x^3 - 7x^2 - 6x$

Answer: D

289) $-(6x^3 + x - 6) + (8x^3 + 2x^2) - (7x^2 - 8x - 1)$

A) $2x^3 - 5x^2 + 7x + 7$
B) $1x^3 - 3x^2 - 7x + 7$
C) $2x^3 + 5x^2 + 9x - 7$
D) $14x^3 - 9x^2 + 7x - 7$

Answer: A

Find the product.

290) $(2m^2)(4m^3)$

A) $-8m$
B) $-8m^5$
C) $8m$
D) $8m^5$

Answer: D

291) $(-3m^4)(4m^4)$

A) $-12m^8$
B) $-12m$
C) $12m$
D) $12m^6$

Answer: A

292) $(-4x^2y^4)(-5x^3y^2)$

A) $20x^5y^6$
B) $20xy^5$
C) $20xy^6$
D) $20x^6y^5$

Answer: A

293) $4x^5(-4x - 1)$

A) $-16x^5 - 4$
B) $-20x^6$
C) $-16x^6 - 4x^5$
D) $16x^6 + 4x^5$

Answer: C

294) $-10x^2(-11x^4 + 10x^3)$

A) $110x^8 - 100x^6$
B) $110x^6 - 100x^5$
C) $110x^6 + 100x^5$
D) $110x^6 + 10x^3$

Answer: B

295) $-12ax^6(3ax^5 + 10x^3 - 4)$

A) $36a^2x^{30} + 120ax^{18} - 48ax^6$
B) $-36a^2x^{11} - 120ax^9 + 48ax^6$
C) $36a^2x^{11} + 120ax^9 - 48ax^6$
D) $-36ax^{30} - 120ax^{18} + 48ax^6$

Answer: B

296) $-7ax^6(10ax^5 - 6x^2 + 2a)$

A) $-70a^2x^{11} - 42ax^8 + 14a^2x^6$
B) $-70ax^{11} + 42ax^8 - 14ax^6$
C) $-70a^2x^{11} + 42ax^8 - 14a^2x^6$
D) $-70a^2x^{30} + 42ax^{12} - 14a^2x^6$

Answer: C

297) $-3a^2x^5(5a^9x^9 - 5x^4 - 4a)$

A) $-15a^{11}x^{14} - 5x^4 - 4a$
B) $15a^{11}x^{14} - 15a^2x^9 - 12a^3x^5$
C) $-15a^{18}x^{45} - 15a^2x^{20} - 12a^2x^5$
D) $-15a^{11}x^{14} + 15a^2x^9 + 12a^3x^5$

Answer: D

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298) $4x^5(-12x^4 - 4x^2)$

A) $-64x^5$ B) $-64x^9 - 64x^7$ C) $-48x^9 - 4x^2$ D) $-48x^9 - 16x^7$

Answer: D

299) $(5m^4z^4)(3m^3z^2)$

A) $15mz^7$ B) $15mz^6$ C) $15m^7z^6$ D) $15m^7z$

Answer: C

300) $(4x + 5)(x + 12)$

A) $x^2 + 60x + 53$ B) $x^2 + 53x + 52$ C) $4x^2 + 53x + 60$ D) $4x^2 + 52x + 60$

Answer: C

301) $(x + 9)(5x - 4)$

A) $5x^2 + 41x - 36$ B) $x^2 + 41x + 41$ C) $5x^2 - 36x + 41$ D) $5x^2 + 40x - 36$

Answer: A

302) $(x + 11)(4x + 9)$

A) $4x^2 + 99x + 53$ B) $4x^2 + 53x + 99$ C) $4x^2 + 53x + 53$ D) $4x^2 + 51x + 99$

Answer: B

303) $(x - 9y)(x - 2y)$

A) $x^2 - 14xy + 18y^2$ B) $x^2 - 11xy + 18y^2$ C) $x^2 - 11xy - 11y^2$ D) $x - 11xy + 18y$

Answer: B

304) $(2a + 3b)(-7a - 4b)$

A) $-14a^2 - 29ab - 12b^2$ B) $-14a^2 - 12b^2$

C) $-14a^2 + 29ab - 12b^2$ D) $-14a^2 + 13ab - 12b^2$

Answer: A

305) $(2 + x)(4x + 7)$

A) $4x^2 + 15x + 14$ B) $x^2 + 15x + 15$ C) $4x^2 + 14x + 14$ D) $4x^2 + 14x + 15$

Answer: A

306) $(x - 10)(-5x - 12)$

A) $-5x^2 + 38x + 120$ B) $-5x^2 + 36x + 120$ C) $-5x^2 + 120x + 38$ D) $-5x^2 + 38x + 38$

Answer: A

307) $\left(2x + \frac{1}{10}\right)\left(7x - \frac{1}{5}\right)$

A) $14x^2 - \frac{11}{10}x - \frac{1}{50}$ B) $14x^2 - \frac{3}{10}x + \frac{1}{50}$ C) $14x^2 + \frac{3}{10}x - \frac{1}{50}$ D) $14x^2 + \frac{3}{10}x + \frac{1}{50}$

Answer: C

308) $(10p - 1)(100p^2 + 10p + 1)$

A) $1000p^3 - 1$ B) $1000p^3 + 110p^2 - 1$ C) $100p^3 - 1$ D) $1000p^3 + 1$

Answer: A

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309) $(7y - 8)(49y^2 + 56y + 64)$

A) $343y^3 - 512$ B) $343y^3 + 448y^2 - 512$

C) $49y^3 + 512$ D) $343y^3 + 512$

Answer: A

310) $(3x^2 + 3x - 3)(x^2 + 4x - 5)$

A) $3x^4 + 12x^3 - 3x^2 - 27x + 15$ B) $3x^4 + 15x^3 - 3x^2 - 27x + 15$

C) $3x^4 + 12x^3 - 6x^2 - 27x + 15$ D) $3x^4 + 15x^3 - 6x^2 - 27x + 15$

Answer: D

311) $(2r^2 + 3r - 3)(r^2 + 3r + 1)$

A) $2r^4 + 9r^3 + 8r^2 - 6r - 3$ B) $2r^4 + 6r^3 + 8r^2 - 6r - 3$

C) $2r^4 + 9r^3 + 11r^2 - 6r - 3$ D) $2r^4 + 6r^3 + 11r^2 - 6r - 3$

Answer: A

312) $(2y + 3)(5y^3 + 2y^2 + 5y - 5)$

A) $10y^4 + 10y^3 + 16y^2 + 5y - 15$ B) $10y^4 + 19y^3 + 25y^2 + 5y - 15$

C) $10y^4 + 19y^3 + 16y^2 - 10y - 15$ D) $10y^4 + 19y^3 + 16y^2 + 5y - 15$

Answer: D

313) $(3x^3 - x^2 + 4x - 1) (2x + 4)$

A) $6x^4 + 10x^3 + 4x^2 + 14x - 4$ B) $6x^3 + 10x^2 + 4x + 14$

C) $5x^4 + 14x^3 + 8x^2 + 16x - 6$ D) $7x^4 - 10x^3 + 3x^2 - 14x + 4$

Answer: A

314) $3x(3x - 1)(3x + 9)$

A) $9x^3 + 24x^2 - 9x$ B) $25x^2 + 73x - 27$ C) $27x^3 + 72x^2 - 27x$ D) $23x^3 + 74x^2 - 25x$

Answer: C

315) $(-4x - 2y)(5x + 10y + 1)$

A) $-20x^2 - 10xy - 4x - 20y^2 - 2y$ B) $-20x^2 - 50xy - 50y^2$

C) $-20x^2 - 50xy - 4x - 20y^2 - 2y$ D) $-20x^2 - 40xy - 4x - 20y^2$

Answer: C

316) $(4x^2 + 3y)(5x^2 - 3y + z)$

A) $20x^4 + 3x^2y + 4x^2z - 9y^2 + 3yz$ B) $20x^4 + 3x^2y^2 - 9y^2$

C) $20x^4 + 3x^2y - 9y^4 + 4x^2yz$ D) $20x^2 + 3xy + 4x^2z - 9y^2 + 3z$

Answer: A

317) $(6x - 5y + 2)(6x - 5y - 2)$

A) $-60xy - 12x + -10y - 4$ B) $36x^2 - 60xy + 25y^2 - 4$

C) $36x^2 + 60xy - 25y^2 - 8$ D) $12x^2 - 10y^2 - 8$

Answer: B

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318) $n^2\left(3n - \frac{1}{6}\right)\left(7n + \frac{1}{3}\right)$

A) $21n^4 - \frac{13}{6}n^3 - \frac{1}{18}n^2$

B) $21n^4 - \frac{1}{6}n^3 + \frac{1}{18}n^2$

C) $21n^4 - \frac{1}{6}n^3 - \frac{1}{18}n^2$

D) $21n^4 + \frac{1}{6}n^3 - \frac{1}{18}n^2$

Answer: C

319) $(x - 8)(x + 8)(x^2 + 64)$

A) $x^4 - 4096$ B) $x^4 - 64$ C) $x^4 - 16x^2 - 64$ D) $x^4 - 256x^2 + 4096$

Answer: A

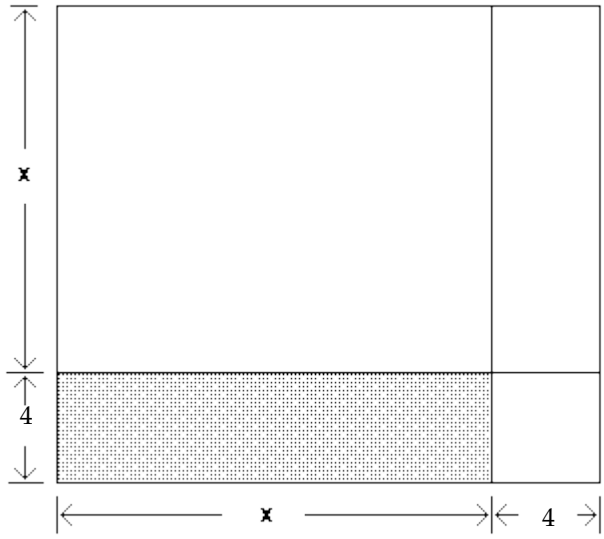
320) $(n - 5)(n - 5)(n + 5)(n + 5)$

A) $n^4 + 50n^2 - 625$ B) $n^4 - 50n + 625$ C) $n^4 + 50n - 625$ D) $n^4 - 50n^2 + 625$

Answer: D

Provide an appropriate response.

321) Consider the following figure, which is a square divided into two squares and two rectangles.



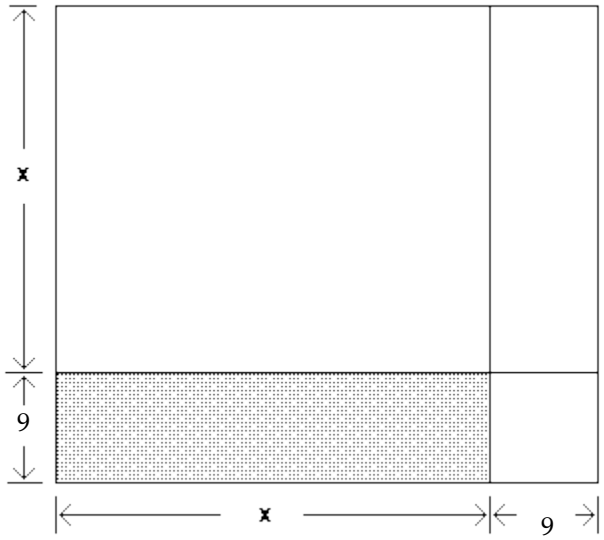
The length of each side of the large square is $x + 4$. Use the formula for the area of a square to write the area of the largest square as a power.

A) $x^2 - 4^2$ B) $(x + 4)^2$ C) $x^2 + 4^2$ D) $(x - 4)^2$

Answer: B

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322) Consider the following figure, which is a square divided into two squares and two rectangles.

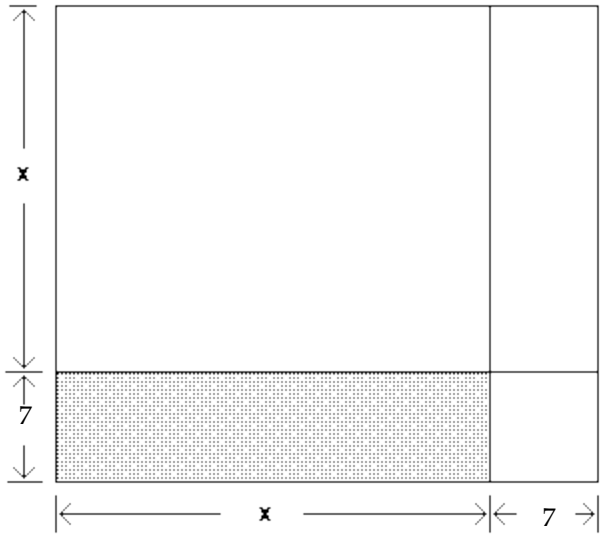


The length of each side of the large square is x + 9. Find a formula for the area of the largest square as a binomial raised to a power. Write the expansion of this binomial.

A) $x^2 - 18x + 81$ B) $x^2 - 81$ C) $x^2 + 81$ D) $x^2 + 18x + 81$

Answer: D

323) Consider the following figure, which is a square divided into two squares and two rectangles.



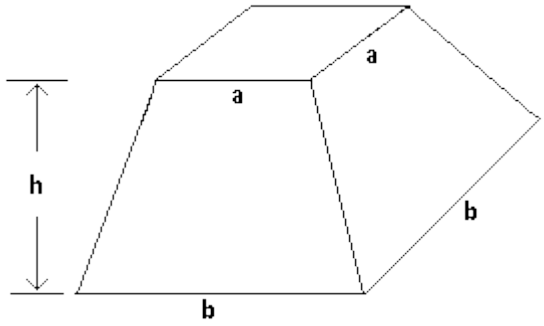
The length of each side of the large square is x + 7, which means that the area of the largest square is $(x + 7)^2$. Use the formulas for the area of a square and the area of a rectangle to write the area of the largest square as a trinomial that represents the sum of the areas of the four figures that comprise it.

A) $x^2 - 2x + 49$ B) $x^2 + 7x + 49$ C) $x^2 + x + 49$ D) $x^2 + 14x + 49$

Answer: D

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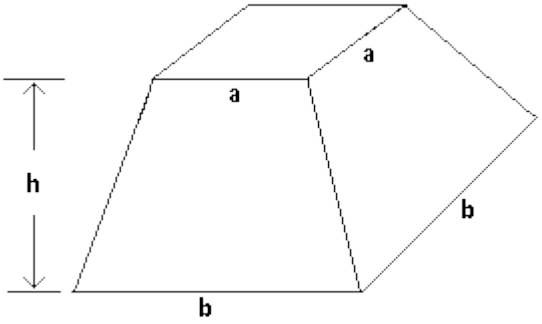
324) The formula used to find the volume of the frustum of a square pyramid is $V = \frac{1}{3} h (a^2 + ab + b^2)$, where b is the length of the base, a is the length of the top, and h is the height. Calculate the volume if a = 260 feet , b = 630 feet , and h = 180 feet.



A) 113,094,000 cubic feet
B) 37,699,000 cubic feet
C) 37,708,000 cubic feet
D) 37,698,000 cubic feet

Answer: D

325) The formula used to find the volume of the frustum of a square pyramid is $V = \frac{1}{3} h (a^2 + ab + b^2)$, where b is the length of the base, a is the length of the top, and h is the height. Try to visualize the figure if a = b = h. Calculate the volume if a = 286 feet, b = 286 feet, and h = 286 feet.

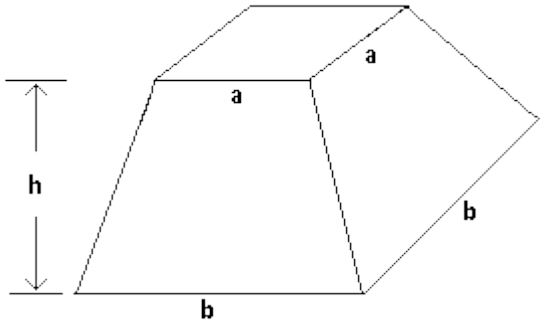


A) 81,796 cubic feet
B) 23,394,656 cubic feet
C) 23,393,756 cubic feet
D) 23,393,656 cubic feet

Answer: D

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326) The formula used to find the volume of the frustum of a square pyramid is $V = \frac{1}{3} h (a^2 + ab + b^2)$, where b is the length of the base, a is the length of the top, and h is the height. Visualize the figure if a = b = h. What would the figure be?



A) A cone B) A cylinder C) A sphere D) A cube

Answer: D

327) The number of farms in a certain country since 1940, in millions, can be approximated by evaluating the polynomial $0.000026045689x^3 - 0.1522580959x^2 + 296.5669762x - 192{,}464.713$, where x is the year in question. Evaluate the polynomial for x = 2000 to determine the number of farms in 2000. Round the answer to the nearest million farms.

A) 2 million farms B) 4 million farms C) 1 million farms D) 5 million farms

Answer: A

Find the domain of the expression.

328) $\frac{3}{x - 2}$

A) $\{x \mid x \neq 3\}$ B) $\{x \mid x \neq -2\}$ C) $\{x \mid x \neq 2\}$ D) all real numbers

Answer: C

329) $\frac{9}{y + 8}$

A) $\{y \mid y \neq 8\}$ B) $\{y \mid y > 9\}$ C) $\{y \mid y \neq -8\}$ D) all real numbers

Answer: C

330) $\frac{p - 4}{-9 + p}$

A) $\{p \mid p \neq 9\}$ B) $\{p \mid p \neq -9\}$ C) all real numbers D) $\{p \mid p \neq 4\}$

Answer: A

331) $\frac{7m}{m - p}$

A) $\{m \mid m \neq p\}$ B) $\{m \mid m \neq 1$ and $p \mid p \neq 1\}$

C) $\{m \mid m \neq -p\}$ D) $\{m \mid m \neq 0$ and $p \mid p \neq 0\}$

Answer: A

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332) $\frac{3x - 4}{(4x - 3)(x + 4)}$

A) $\left\{\{x \mid x \neq \frac{4}{3}, -4\}\right\}$ B) $\left\{\{x \mid x \neq -\frac{3}{4}, 4\}\right\}$ C) $\left\{\{x \mid x \neq \frac{3}{4}, -4\}\right\}$ D) all real numbers

Answer: C

333) $\frac{x^2 - 64}{x^2 + 7x + 6}$

A) $\{x \mid x \neq -8 \text{ and } x \neq +8\}$
B) $\{x \mid x \neq 6 \text{ and } x \neq 1\}$
C) $\{x \mid x \neq -6 \text{ and } x \neq -1\}$
D) $\{x \mid x \neq 0\}$

Answer: C

334) $\frac{y}{y^2 - 9}$

A) $\{y \mid y \neq 0\}$
B) $\{y \mid y \neq 9 \text{ and } y \neq -9\}$
C) $\{y \mid y \neq 81 \text{ and } y \neq -81\}$
D) $\{y \mid y \neq 3 \text{ and } y \neq -3\}$

Answer: D

Write the expression in lowest terms.

335) $\frac{8k^2}{15k}$

A) $\frac{4}{7}$ B) $\frac{4}{7}k$ C) $\frac{8}{15}k$ D) $\frac{8}{15}$

Answer: C

336) $\frac{8m + 40}{3m + 15}$

A) $m + 5$ B) $\frac{m + 5}{m + 15}$ C) 1 D) $\frac{8}{3}$

Answer: D

337) $\frac{2(z + 6)}{(z + 6)(z - 6)}$

A) $\frac{z + 6}{z - 6}$ B) $\frac{2}{z + 6}$ C) $\frac{2}{z - 6}$ D) $\frac{1}{z - 6}$

Answer: C

338) $\frac{m^2 - 8m + 12}{m^2 + 3m - 10}$

A) $\frac{m + 6}{m - 5}$ B) $\frac{m - 5}{m + 6}$ C) $\frac{m - 2}{m + 2}$ D) $\frac{m - 6}{m + 5}$

Answer: D

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339) $\frac{2m^2 - 3m - 20}{2m^2 - 13m + 20}$

A) $\frac{m - 5}{m + 5}$ B) $\frac{m + 6}{m - 4}$ C) $\frac{2m + 5}{2m - 5}$ D) $\frac{2m - 4}{2m + 4}$

Answer: C

340) $\frac{8x^3 - 10x}{6x^2}$

A) $\frac{4x^2}{3x - 5}$ B) $4x^2 - 5$ C) $\frac{4x^2 - 5}{3x}$ D) $\frac{4x - 5}{6}$

Answer: C

341) $\frac{x^3 + 8}{x + 2}$

A) $x^2 + 4$ B) $x^2 - 2$ C) $x^2 - 2x + 4$ D) $x^2 - 4x + 2$

Answer: C

342) $\frac{m^3 - 64}{m - 4}$

A) $x^2 - 4$ B) $x^2 - 16x + 4$ C) $x^2 + 16$ D) $x^2 + 4x + 16$

Answer: D

Find the product or quotient.

343) $\frac{7x^2}{5} \cdot \frac{30}{x^3}$

A) $42x$ B) $\frac{42}{x^2}$ C) $\frac{42}{x}$ D) $\frac{210}{x}$

Answer: C

344) $\frac{8p - 8}{p} \cdot \frac{4p^2}{7p - 7}$

A) $\frac{32}{7}p$ B) $\frac{32p^3 - 32p^2}{7p^2 - 7p}$ C) $\frac{56p^2 + 112p + 56}{4p^3}$ D) $\frac{7}{32}p$

Answer: A

345) $\frac{2x^2}{3} \div \frac{x^3}{21}$

A) $\frac{42x^2}{3x^3}$ B) $\frac{14x^2}{x^3}$ C) $\frac{x}{14}$ D) $\frac{14}{x}$

Answer: D

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346) $\frac{7p - 7}{p} \div \frac{8p - 8}{4p^2}$

A) $\frac{2}{7}p$ B) $\frac{28p^3 - 28p^2}{8p^2 - 8p}$ C) $\frac{56p^2 + 112p + 56}{4p^3}$ D) $\frac{7}{2}p$

Answer: D

347) $\frac{k^2 + 5k + 6}{k^2 + 6k + 9} \cdot \frac{k^2 + 3k}{k^2 + 5k + 6}$

A) $\frac{k}{k + 3}$ B) $\frac{k}{k^2 + 6k + 9}$ C) $\frac{1}{k + 3}$ D) $\frac{k^2 + 3k}{k + 3}$

Answer: A

348) $\frac{k^2 + 8k + 12}{k^2 + 10k + 24} \cdot \frac{k^2 + 4k}{k^2 - 3k - 10}$

A) $\frac{k^2 + 4k}{k - 5}$ B) $\frac{k}{k^2 + 10k + 24}$ C) $\frac{k}{k - 5}$ D) $\frac{1}{k - 5}$

Answer: C

349) $\frac{z^2 + 12z + 35}{z^2 + 13z + 42} \div \frac{z^2 + 5z}{z^2 + 13z + 42}$

A) $\frac{z}{z^2 + 13z + 42}$ B) $\frac{z + 7}{z^2 + 6z}$ C) $\frac{z + 7}{z}$ D) $z + 7$

Answer: C

350) $\frac{z^2 + 6z + 9}{z^2 + 12z + 27} \div \frac{z^2 + 3z}{z^2 + 6z - 27}$

A) $\frac{z}{z^2 + 12z + 27}$ B) $\frac{z - 3}{z^2 + 9z}$ C) $\frac{z - 3}{z}$ D) $z - 3$

Answer: C

351) $\frac{(x - y)^2 - 4}{(x + y)^2 - 4} \div \frac{x - y - 2}{x + y + 2}$

A) $\frac{x + y + 2}{x - y - 2}$ B) $\frac{x - y + 2}{x + y - 2}$ C) -1 D) $x - y + 2$

Answer: B

352) $\frac{7x^2 + 9x - 10}{4x - 28} \cdot \frac{x^2 - 7x}{49x^2 - 25} \div \frac{3x + 6}{5x^3}$

A) $\frac{12}{5x^4(7x + 5)}$ B) $\frac{5x^3}{12(7x + 5)}$ C) $\frac{5x^4}{12(7x + 5)}$ D) $\frac{3(x + 2)^2}{20x^2(7x + 5)}$

Answer: C

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Perform the indicated operations.

353) $\frac{7}{8x} + \frac{3}{4x}$

A) $\frac{13}{16x}$ B) $\frac{8}{13x}$ C) 1 D) $\frac{13}{8x}$

Answer: D

354) $\frac{7}{9x} - \frac{1}{3x}$

A) $\frac{4}{9x}$ B) $\frac{2}{9x}$ C) $\frac{9}{4x}$ D) 1

Answer: A

355) $\frac{3}{14x} + \frac{9}{10x^2}$

A) $\frac{12}{14x + 10x^2}$ B) $\frac{3(5x + 21)}{70x}$ C) $\frac{12}{140x^2}$ D) $\frac{3(5x + 21)}{70x^2}$

Answer: D

356) $\frac{x}{x^2 - 16} - \frac{4}{x^2 + 5x + 4}$

A) $\frac{x^2 + 3x + 16}{(x - 4)(x + 4)(x + 1)}$ B) $\frac{x^2 - 3}{(x - 4)(x + 4)(x + 1)}$ C) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)(x + 1)}$ D) $\frac{x^2 - 3x + 16}{(x - 4)(x + 4)}$

Answer: C

357) $\frac{2ab}{a^2 - b^2} - \frac{b}{a - b} + \frac{4}{2}$

A) $\frac{2a + 3b}{a^2 - b^2}$ B) $\frac{(a - b)(2a + 3b)}{a^2 - b^2}$ C) $\frac{2a + 3b}{a + b}$ D) $\frac{2ab - b + 2}{a + b + 1}$

Answer: C

358) $\frac{4}{2r^2 - 9rs - 5s^2} - \frac{1}{5r^2 - 26rs + 5s^2} + \frac{4}{10r^2 + 3rs - s^2}$

A) $\frac{26r - 25s}{(2r + s)(r - 5s)(5r - s)}$ B) $\frac{22r - 23s}{(2r + s)(r - 5s)(5r - s)}$

C) $\frac{26r - 23s}{(2r + s)(r - 5s)(5r - s)}$ D) $\frac{22r - 25s}{(2r + s)(r - 5s)(5r - s)}$

Answer: D

359) $\frac{2ab}{a^2 - b^2} - \frac{b}{a - b} + 3$

A) $\frac{3a + 4b}{a^2 - b^2}$ B) $\frac{3a + 4b}{a + b}$ C) $\frac{(a - b)(3a + 4b)}{a2 - b^2}$ D) $\frac{2ab - b + 3}{a + b + 1}$

Answer: B

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360) $\frac{1}{2x - 4} - \frac{2}{5x + 5} + \frac{1}{3x + 6}$

A) $\frac{13x^2 + 35x + 58}{30(x - 2)(x + 1)(x + 2)}$

B) $\frac{37x^2 + 35x + 58}{10x + 15}$

C) $\frac{37x^2 + 35x + 58}{30(x - 2)(x + 1)(x + 2)}$

D) $\frac{13x^2 + 35x + 13}{10x + 15}$

Answer: A

361) $\frac{16x}{5(4x + 1)} - \frac{1}{5x(4x + 1)} + \frac{1}{x}$

A) $\frac{16x^2 + 20x + 4}{5x}$

B) $\frac{4(x + 1)}{20x^2 + 5x}$

C) $\frac{16x^2 + 20x + 4}{20x^2 + 5x}$

D) $\frac{4(x + 1)}{5x}$

Answer: D

362) $\frac{-49x}{2(7x + 1)} + \frac{1}{2x(7x + 1)} - \frac{18}{x}$

A) $-\frac{7(x + 5)}{14x^2 + 2x}$

B) $\frac{-49x^2 - 252x - 35}{14x^2 + 2x}$

C) $\frac{-49x^2 - 252x - 35}{2x}$

D) $-\frac{7(x + 5)}{2x}$

Answer: D

Write the expression with only positive exponents and evaluate if possible. Assume all variables represent nonzero real numbers.

363) $\frac{\frac{x}{7}}{\frac{6}{x + 7}}$

A) $\frac{x + 7}{42x}$

B) $\frac{x(x + 7)}{42}$

C) $\frac{6x}{7(x + 7)}$

D) $42x(x + 7)$

Answer: B

364) $\frac{\frac{y}{3}}{\frac{7}{y + 5}}$

A) $\frac{7y}{3(y + 5)}$

B) $\frac{y + 5}{21y}$

C) $\frac{y(y + 5)}{21}$

D) $21y(y + 5)$

Answer: C

365) $\frac{\frac{9}{y}}{\frac{8}{y + 6}}$

A) $72y(y + 6)$

B) $\frac{8y}{9(y + 6)}$

C) $\frac{9(y + 6)}{8y}$

D) $\frac{y + 6}{72y}$

Answer: C

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366) $\dfrac{\frac{8}{y}}{\frac{6}{y+3}}$

A) $48y(y+3)$ B) $\dfrac{3y}{4(y+3)}$ C) $\dfrac{y+3}{48y}$ D) $\dfrac{4(y+3)}{3y}$

Answer: D

367) $\dfrac{\frac{1}{a}+1}{\frac{1}{a}-1}$

A) $\dfrac{a}{1-a^2}$ B) $1-a^2$ C) $\dfrac{1+a}{1-a}$ D) 1

Answer: C

368) $\dfrac{4+\frac{2}{x}}{\frac{x}{3}+\frac{1}{6}}$

A) 12 B) $\dfrac{x}{12}$ C) 1 D) $\dfrac{12}{x}$

Answer: D

369) $\dfrac{4+\frac{2}{s}}{\frac{s}{3}+\frac{1}{6}}$

A) $\dfrac{12}{s}$ B) $\dfrac{s}{12}$ C) 12 D) 1

Answer: A

370) $\dfrac{\frac{8}{p^2-36}+p}{\frac{1}{p-6}}$

A) $\dfrac{8+p^3-36p}{p+6}$ B) $\dfrac{8+p^3+36p}{p}$ C) $\dfrac{8+p^2-36p}{p+36}$ D) $\dfrac{1}{p^2-6}$

Answer: A

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371) $\dfrac{\dfrac{3}{x-h}+\dfrac{3}{x}}{2x-h}$

A) $\dfrac{3}{x(x+h)}$ B) $\dfrac{3}{x(x-h)}$ C) $\dfrac{1}{x(x-h)}$ D) h

Answer: B

372) $\dfrac{1}{h}\left(\dfrac{1}{(x+h)^2+5}-\dfrac{1}{x^2+5}\right)$

A) $\dfrac{-2x+h}{(x+h)^2(x^2+5)}$ B) $\dfrac{2x+h}{((x+h)^2+5)(x^2+5)}$

C) $\dfrac{-2x-h}{((x+h)^2+5)(x^2+5)}$ D) $\dfrac{2x}{\left((x+h)^2+5\right)}$

Answer: C

Solve the problem. Round to two decimal places unless otherwise indicated.

373) If the average cost per unit C(x) to produce x units of plywood is given by $C(x)=\dfrac{600}{x+20}$, what is the unit cost for 20 units?

A) \$1.50 B) \$10.00 C) \$30.00 D) \$15.00

Answer: D

374) Suppose the cost per ton, y, to build an oil platform of x thousand tons is approximated by $y=\dfrac{312{,}500}{x+625}$. What is the cost per ton for x = 20?

A) \$15625.00 B) \$25.00 C) \$484.50 D) \$15000.00

Answer: C

375) In the following formula, y is the minimum number of hours of studying required to attain a test score of x: $y=\dfrac{0.33x}{100.5-x}$. How many hours of study are needed to score 84?

A) 4.82 hr B) 1.68 hr C) 16.80 hr D) 101.10 hr

Answer: B

376) If the average cost per unit C(x) to produce x units of plywood is given by $C(x)=\dfrac{1500}{x+50}$, what do 400 units cost?

A) \$1499.88 B) \$1333.33 C) \$12000.00 D) \$139.99

Answer: B

377) Suppose the cost per ton, y, to build an oil platform of x thousand tons is approximated by $y=\dfrac{62{,}500}{x+125}$. What is the cost per ton for x = 300?

A) \$147.06 B) \$83.33 C) \$150,000.00 D) \$44,117.65

Answer: A

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378) In the following formula, y is the minimum number of hours of studying required to attain a test score of x: $y = \frac{0.36x}{100.5 - x}$. How many hours of study are needed to score 99?

A) 100.14 hr B) 23.76 hr C) 237.60 hr D) 66.24 hr

Answer: B

379) Suppose a cost–benefit model is given by $y = \frac{1.6x}{100 - x}$, where y is the cost in thousands of dollars for removing x percent of a given pollutant. Find the cost of removing 25% to the nearest dollar.

A) $533 B) $1600 C) $400 D) $333

Answer: A

Write in radical form. Assume all variables represent positive real numbers.

380) $(10x)^{1/5}$

A) $\frac{1}{\sqrt[5]{10x}}$ B) $\frac{\sqrt{10x}}{5}$ C) $\sqrt[5]{10x}$ D) $\sqrt[1/5]{10x}$

Answer: C

381) $(-7x)^{1/3}$

A) $\sqrt[3]{-7x}$ B) $\sqrt{-\frac{7x}{3}}$ C) $\sqrt[1/3]{-7x}$ D) $\frac{1}{\sqrt[3]{-7x}}$

Answer: A

382) $10x^{1/3}$

A) $\frac{10}{\sqrt[3]{x}}$ B) $\sqrt[1/3]{10x}$ C) $\sqrt[3]{10x}$ D) $10\sqrt[3]{x}$

Answer: D

383) $(2x)^{1/5}$

A) $\frac{\sqrt{2x}}{5}$ B) $\sqrt[5]{2x}$ C) $\sqrt[1/5]{2x}$ D) $-\sqrt[5]{2x}$

Answer: B

384) $x^{1/3}$

A) x^{-3} B) $\sqrt[3]{x}$ C) $\sqrt{x^3}$ D) $\frac{1}{\sqrt[3]{x}}$

Answer: B

385) $(mn)^{1/7}$

A) $(\sqrt{mn})^7$ B) $\frac{1}{\sqrt[7]{mn}}$ C) $\sqrt[7]{mn}$ D) $(mn)^{-7}$

Answer: C

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386) $m^{2/3}$

A) $\left(\sqrt[3]{m}\right)^2$ B) $\left(\sqrt[2]{m}\right)^3$ C) $\sqrt[2]{m^3}$ D) $\frac{1}{\sqrt[2]{m}}$

Answer: A

387) $(8m^4 + 6k^2)^{4/3}$

A) $\frac{1}{\left(\sqrt[4]{8m^4 + 6k^2}\right)^3}$ B) $\left(\sqrt[4]{8m^4 + 6k^2}\right)^3$ C) $\frac{1}{\left(\sqrt[3]{8m^4 + 6k^2}\right)^4}$ D) $\left(\sqrt[3]{8m^4 + 6k^2}\right)^4$

Answer: D

388) $(3m + n)^{7/8}$

A) $\sqrt[7]{(3m + n)^8}$ B) $\sqrt[7]{3m + n^8}$ C) $\sqrt[8]{3m + n^7}$ D) $\sqrt[8]{(3m + n)^7}$

Answer: D

389) $(9m + 8n)^{3/5}$

A) $\sqrt[3]{9m + 8n^5}$ B) $\sqrt[3]{(9m + 8n)^5}$ C) $\sqrt[5]{9m + 8n^3}$ D) $\sqrt[5]{(9m + 8n)^3}$

Answer: D

Write in exponential form. Assume all variables are positive real numbers.

390) $\sqrt[4]{x^5}$

A) $5x^4$ B) $x^{5/4}$ C) $4x^5$ D) $x^{4/5}$

Answer: B

391) $\sqrt[5]{x^4}$

A) $x^{4/5}$ B) $x^{4/20}$ C) $x^{1/20}$ D) $x^{5/4}$

Answer: A

392) $-\sqrt{112m^3}$

A) $112m^{2/3}$ B) $-112m^{3/2}$ C) $-12{,}544m^{2/3}$ D) $-112^{1/2}m^{3/2}$

Answer: D

393) $-6\sqrt{7m^9}$

A) $252m^{2/9}$ B) $(-6 \cdot 7)^{1/2}m^{9/2}$ C) $-6 \cdot 7^{1/2}m^{9/2}$ D) $-252m^{9/2}$

Answer: C

Simplify the expression.

394) $\sqrt{(-49)^2}$

A) 7 B) −7 C) 49 D) −49

Answer: C

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395) $\sqrt{9x^2}$

A) $-3x$ B) $3x^2$ C) $3|x|$ D) $9x$

Answer: C

396) $\sqrt{(z-8)^2}$

A) $|z|-8$ B) $8-z$ C) $z-8$ D) $|z-8|$

Answer: D

397) $\sqrt{(3y+3)^2}$

A) $-3y-3$ B) $3y+3$ C) $3|y|+3$ D) $|3y+3|$

Answer: D

Simplify the expression. Assume all variables represent positive real numbers.

398) $\sqrt[3]{729}$

A) 27 B) 81 C) 9 D) ±9

Answer: C

399) $\sqrt[3]{-8}$

A) -2 B) ±2 C) not a real number D) 4

Answer: A

400) $-\sqrt[4]{256}$

A) -16 B) -4 C) not a real number D) -3

Answer: B

401) $\sqrt[3]{-\frac{64}{27}}$

A) $-\frac{64}{27}$ B) $\frac{16}{9}$ C) $\frac{4}{3}$ D) $-\frac{4}{3}$

Answer: D

402) $\sqrt[4]{\frac{256}{81}}$

A) $\frac{64}{27}$ B) $\frac{16}{9}$ C) $\frac{4}{3}$ D) $\frac{256}{81}$

Answer: C

403) $\sqrt[6]{(-8)^6}$

A) 8 B) not a real number C) -8 D) 64

Answer: A

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404) $-\sqrt[3]{-125x^3}$

A) $-5x$ B) $5x$ C) not a real number D) $5x^3$

Answer: B

405) $\sqrt[4]{256a^4}$

A) $4\sqrt{a}$ B) $4a$ C) $4a^2$ D) $256a$

Answer: B

406) $\sqrt[3]{125k^{12}}$

A) $125k^4$ B) $5k^{15}$ C) $5k^4$ D) $-5k^4$

Answer: C

407) $\dfrac{\sqrt[3]{1250}}{\sqrt[3]{10}}$

A) $5\sqrt[3]{5}$ B) 5 C) 125 D) 25

Answer: B

408) $-\sqrt{24}$

A) $-2\sqrt{6}$ B) 4 C) $-4\sqrt{6}$ D) not a real number

Answer: A

409) $\sqrt{294}$

A) $49\sqrt{6}$ B) $7\sqrt{6}$ C) 17 D) 7

Answer: B

410) $\sqrt[3]{864}$

A) 29 B) $6\sqrt[3]{4}$ C) $4\sqrt[3]{6}$ D) 9

Answer: B

411) $\sqrt{48x^2y}$

A) $4xy^2\sqrt{3}$ B) $4xy\sqrt{3}$ C) $4x^2\sqrt{3y}$ D) $4x\sqrt{3y}$

Answer: D

412) $\sqrt{192x^2}$

A) $192x$ B) $8x\sqrt{3}$ C) $8\sqrt{3x}$ D) $3x^2\sqrt{8}$

Answer: B

413) $\sqrt{98k^7q^8}$

A) $7q^4\sqrt{2k^7}$ B) $7k^3q^4\sqrt{2}$ C) $7k^3q^4\sqrt{2k}$ D) $7k^7q^8\sqrt{2k}$

Answer: C

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414) $\sqrt[3]{343x^4y^5}$

A) $7xy\sqrt[3]{xy}$ B) $7xy^2\sqrt[3]{xy}$

C) $7xy\sqrt[3]{xy^2}$ D) $5x^2y^2\sqrt[3]{xy^2}$

Answer: C

415) $\sqrt[3]{-27a^8b^5}$

A) $3ab\sqrt[3]{a^2b^2}$ B) $3ab\sqrt[3]{a^3b^3}$ C) not a real number D) $-3a^2b\sqrt[3]{a^2b^2}$

Answer: D

416) $\sqrt[5]{x^{17}y^9z^{12}}$

A) $xyz\sqrt[5]{x^2y^4z^2}$ B) $x^3yz^2\sqrt[5]{x^2y^4z^2}$ C) $x^3yz^2\sqrt[5]{y^4z^2}$ D) $x^{15}y^5z^{10}\sqrt[5]{x^2y^4z^2}$

Answer: B

417) $\sqrt[3]{\sqrt{9}}$

A) $\sqrt{3}$ B) $\sqrt[5]{9}$ C) 3 D) $\sqrt[3]{3}$

Answer: D

418) $\sqrt{\frac{108}{8}}$

A) $\frac{3\sqrt{6}}{2}$ B) $\frac{\sqrt{4}}{2}$ C) $\frac{2}{3}$ D) $\frac{3}{\sqrt{8}}$

Answer: A

419) $\sqrt{\frac{29}{x^4}}$

A) $\frac{29}{x^2}$ B) $\frac{\sqrt{29}}{x}$ C) $\frac{\sqrt{29}}{x^4}$ D) $\frac{\sqrt{29}}{x^2}$

Answer: D

420) $\sqrt[5]{\frac{x^2}{3125}}$

A) $\sqrt{\frac{5x^2}{3125}}$ B) $\frac{\sqrt[5]{x^2}}{5}$ C) $\frac{\sqrt[5]{x}}{5}$ D) $\frac{x}{5}$

Answer: B

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421) $\sqrt{\frac{8x^2y}{25}}$

A) $x\sqrt{\frac{8y}{5}}$ B) $4x\sqrt{2y}$ C) $\frac{2x\sqrt{2y}}{5}$ D) $\frac{2\sqrt{2x^2y}}{5}$

Answer: C

422) $\sqrt{\frac{24a^2b}{c^2}}$

A) $\frac{a\sqrt{24b}}{c}$ B) $\frac{2\sqrt{6a^2b}}{c}$ C) $\frac{4a\sqrt{6b}}{c}$ D) $\frac{2a\sqrt{6b}}{c}$

Answer: D

423) $\sqrt[3]{\frac{y^{20}}{216}}$

A) $\frac{y^6\sqrt[3]{y^2}}{6}$ B) $6y^6\sqrt[3]{y^2}$ C) $y^6 - 6\sqrt[3]{y^2}$ D) $\frac{y^6 + \sqrt[3]{y^2}}{6}$

Answer: A

424) $-\sqrt{\frac{49}{24}}$

A) -24 B) $-7\sqrt{6}$ C) $-\frac{7\sqrt{6}}{6}$ D) $-\frac{7\sqrt{6}}{12}$

Answer: D

425) $\sqrt{\frac{4}{5}}$

A) $2\sqrt{5}$ B) $\frac{2\sqrt{5}}{5}$ C) 27 D) $\frac{4\sqrt{5}}{5}$

Answer: B

426) $\sqrt{\frac{18}{x}}$

A) $3\sqrt{\frac{2}{x}}$ B) $3\sqrt{2x}$ C) $\frac{\sqrt{3x}}{x}$ D) $\frac{3\sqrt{2x}}{x}$

Answer: D

427) $-\sqrt{\frac{18x^3}{y^5}}$

A) $-\frac{x\sqrt{18xy}}{y^3}$ B) $-\frac{3x}{y^2}\sqrt{\frac{2x}{y}}$ C) $-\frac{3x^3\sqrt{2}}{y^5}$ D) $-\frac{3x\sqrt{2xy}}{y^3}$

Answer: D

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428) $\sqrt[3]{\frac{5}{6}}$

A) $\frac{\sqrt[3]{180}}{6}$ B) $\frac{\sqrt[3]{1080}}{6}$ C) $\frac{\sqrt[3]{30}}{6}$ D) $\frac{180}{6}$

Answer: A

429) $\sqrt[4]{\frac{4}{3}}$

A) $\frac{\sqrt[4]{108}}{3}$ B) $3\sqrt[4]{108}$ C) $\frac{\sqrt[4]{36}}{3}$ D) $\frac{\sqrt[4]{27}}{3}$

Answer: A

430) $\sqrt[3]{\frac{7}{9x^2}}$

A) $\frac{\sqrt[3]{21x}}{3x}$ B) $\frac{\sqrt[3]{63x}}{9x}$ C) $\frac{\sqrt[3]{567x^2}}{9x}$ D) $\frac{\sqrt[3]{567x}}{81}$

Answer: A

431) $-\sqrt[3]{\frac{2x}{y}}$

A) $-\frac{\sqrt[3]{2x^2y^2}}{y}$ B) $-\frac{\sqrt[3]{2xy}}{y}$ C) $-\frac{\sqrt[3]{2xy^2}}{y}$ D) $-\frac{\sqrt[3]{2x^2y}}{y}$

Answer: C

432) $\sqrt[4]{\frac{16}{y}}$

A) $\frac{2\sqrt[4]{y^2}}{y}$ B) $\frac{2\sqrt[4]{y}}{y}$ C) $\frac{2\sqrt[4]{y^3}}{y}$ D) $\frac{2\sqrt[4]{y^3}}{y^2}$

Answer: C

433) $\sqrt{100} + \sqrt{4}$

A) 12 B) $2\sqrt{3}$ C) $2\sqrt{26}$ D) 6

Answer: A

434) $\sqrt{49} - \sqrt{169}$

A) –3 B) $-\sqrt{6}$ C) –6 D) $-2\sqrt{30}$

Answer: C

435) $8\sqrt{3} + 2\sqrt{3}$

A) 30 B) $10\sqrt{6}$ C) $16\sqrt{3}$ D) $10\sqrt{3}$

Answer: D

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436) $-6\sqrt{15} + 14\sqrt{15}$

A) $8\sqrt{15}$ B) $-9\sqrt{15}$ C) $21\sqrt{15}$ D) $-20\sqrt{15}$

Answer: A

437) $7\sqrt{7} + 4\sqrt{63}$

A) $11\sqrt{7}$ B) $-19\sqrt{7}$ C) $5\sqrt{7}$ D) $19\sqrt{7}$

Answer: D

438) $\sqrt{3x} + 7\sqrt{108x} + 5\sqrt{12x}$

A) $13\sqrt{123x}$ B) $52\sqrt{3x}$ C) $12\sqrt{123x}$ D) $53\sqrt{3x}$

Answer: D

439) $6\sqrt{48x^2} - 3\sqrt{27x^2} - \sqrt{3x^2}$

A) $15x\sqrt{3}$ B) $2x\sqrt{21}$ C) $3x\sqrt{21}$ D) $14x\sqrt{3}$

Answer: D

440) $13\sqrt[3]{3} + 5\sqrt[3]{3}$

A) $18\sqrt[3]{6}$ B) $-8\sqrt[3]{3}$ C) $18\sqrt[3]{9}$ D) $18\sqrt[3]{3}$

Answer: D

441) $10\sqrt[4]{x^7} - 2x\sqrt[4]{x^3}$

A) $8x\sqrt[4]{x^3}$ B) $10\sqrt[4]{x^7} - 2x\sqrt[4]{x^3}$ C) $8x\sqrt[4]{x^7}$ D) $12\sqrt[4]{x^3}$

Answer: A

442) $4\sqrt[3]{a} + \sqrt[3]{27a}$

A) $12\sqrt[3]{a}$ B) $4\sqrt[3]{a} + \sqrt[3]{27a}$ C) $5\sqrt[3]{27a}$ D) $7\sqrt[3]{a}$

Answer: D

443) $4\sqrt[3]{64x} + 4\sqrt[3]{27x}$

A) $28\sqrt[3]{x}$ B) $28x$ C) $7\sqrt[3]{x}$ D) $4\sqrt[3]{91x}$

Answer: A

444) $9\sqrt[4]{m^9p^6} - 4m^2p\sqrt[4]{mp^2}$

A) $5m^2p\sqrt[4]{mp^2}$ B) 5

C) cannot be simplified D) $13mp^2\sqrt[4]{mp^2}$

Answer: A

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445) $4\sqrt[7]{x^8y} - 3x\sqrt[7]{xy}$

A) $(4 - 3x)\sqrt[7]{xy}$

B) cannot be simplified

C) $2x\sqrt[7]{xy}$

D) $x\sqrt[7]{xy}$

Answer: D

446) $16\sqrt[3]{2} - 5\sqrt[3]{250}$

A) $-9\sqrt[3]{2}$

B) $9\sqrt[3]{2}$

C) $11\sqrt[3]{2}$

D) $16\sqrt[3]{2} - 5\sqrt[3]{250}$

Answer: A

447) $\sqrt{15} \cdot \sqrt{108}$

A) $-30\sqrt{3}$

B) $18\sqrt{5}$

C) $30\sqrt{3}$

D) $-18\sqrt{5}$

Answer: B

448) $\sqrt[3]{112} \cdot \sqrt[3]{16}$

A) $8\sqrt[3]{12}$

B) $4\sqrt[3]{28}$

C) $4\sqrt[3]{20}$

D) $8\sqrt[3]{28}$

Answer: B

449) $\sqrt{14m^5} \cdot \sqrt{7m^{13}}$

A) $7m^{10}$

B) $7m^9\sqrt{2}$

C) $14m^6\sqrt{7}$

D) $7m^8\sqrt{2}$

Answer: B

450) $\sqrt[3]{xy^5} \cdot \sqrt[3]{x^{13}y^{17}}$

A) $x^4y^8\sqrt[3]{xy}$

B) $x^4y^7\sqrt[3]{x^2y}$

C) $x^4y^5\sqrt[3]{x^2y^2}$

D) $x^4y^7\sqrt[3]{xy^2}$

Answer: B

451) $(\sqrt{8} + 5)(\sqrt{8} - 5)$

A) 3

B) $8 - 2\sqrt{5}$

C) 33

D) -17

Answer: D

452) $(\sqrt{3} + \sqrt{7})(\sqrt{3} - \sqrt{7})$

A) $3 + 2\sqrt{21}$

B) -4

C) 10

D) $3 - 2\sqrt{21}$

Answer: B

453) $(2\sqrt{5} + 3\sqrt{3})(4\sqrt{5} + 8\sqrt{3})$

A) $8\sqrt{5} + 24\sqrt{3}$

B) $-32 + 28\sqrt{15}$

C) $8\sqrt{5} + 24\sqrt{3} + 28\sqrt{15}$

D) $112 + 28\sqrt{15}$

Answer: D

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454) $(\sqrt{2}+5)(\sqrt{7}+4)$

A) $\sqrt{14}+4\sqrt{2}+5\sqrt{7}+20$ B) $\sqrt{14}+9\sqrt{7}+20$

C) $10\sqrt{14}+20$ D) $\sqrt{14}+20$

Answer: A

455) $\left(\sqrt[3]{5}-2\right)\left(\sqrt[3]{5^2}+2\sqrt[3]{5}+4\right)$

A) -3 B) $4\sqrt[3]{5^2}-8\sqrt[3]{5}+13$ C) $4\sqrt[3]{5^2}+8\sqrt[3]{5}-3$ D) 13

Answer: A

456) $\dfrac{\sqrt[3]{x^2y}\cdot\sqrt[3]{x}}{\sqrt[3]{y^2}}$

A) $x\sqrt[3]{y}$ B) $\dfrac{x\sqrt[3]{y^2}}{y}$ C) $\dfrac{x\sqrt[3]{y}}{y}$ D) $x\sqrt[3]{y^2}$

Answer: B

457) $\dfrac{\sqrt[3]{27xy^2}\cdot\sqrt[3]{3y^2}}{\sqrt[3]{243xy^4}}$

A) $\dfrac{\sqrt[3]{9}}{3}$ B) $\dfrac{\sqrt[3]{3}}{3}$ C) $\sqrt[3]{3}$ D) $\dfrac{\sqrt[3]{9}}{9}$

Answer: A

458) $\dfrac{1}{\sqrt{2}}+\dfrac{4}{\sqrt{18}}-\dfrac{3}{\sqrt{8}}$

A) $\dfrac{5}{12}\sqrt{2}$ B) $-\dfrac{7}{12}\sqrt{2}$ C) $\dfrac{5}{12}\sqrt{14}$ D) $\dfrac{7}{12}\dfrac{1}{\sqrt{2}}$

Answer: A

459) $\dfrac{\sqrt{98}}{5}-\dfrac{4\sqrt{2}}{5}+\dfrac{\sqrt{2}}{\sqrt{25}}$

A) $\dfrac{4\sqrt{2}}{5}$ B) $-\dfrac{\sqrt{96}}{5}$ C) $\dfrac{6\sqrt{2}}{5}$ D) $\dfrac{4\sqrt{2}}{25}$

Answer: A

460) $\sqrt{\dfrac{7}{8}}-\sqrt{\dfrac{112}{128}}$

A) 0 B) -4 C) $-\dfrac{1}{4}$ D) -1

Answer: A

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461) $\frac{\sqrt{245}}{7} - \frac{5\sqrt{5}}{7} + \frac{\sqrt{5}}{\sqrt{49}}$

A) $\frac{3\sqrt{5}}{49}$ B) $-\frac{\sqrt{240}}{7}$ C) $\frac{3\sqrt{5}}{7}$ D) $\frac{5\sqrt{5}}{7}$

Answer: C

462) $\frac{4}{\sqrt[3]{2}} - \frac{31}{\sqrt[3]{16}} + \frac{1}{\sqrt[3]{54}}$

A) $-\frac{77}{12}\sqrt[3]{2}$ B) $-\frac{67}{12}\sqrt[3]{4}$ C) $\frac{65}{12}\sqrt[3]{2}$ D) $-\frac{35}{6}\sqrt[3]{4}$

Answer: B

463) $\frac{-4}{\sqrt[3]{2}} + \frac{34}{\sqrt[3]{54}} - \frac{1}{\sqrt[3]{16}}$

A) $\frac{41}{6}\sqrt[3]{2}$ B) $\frac{41}{12}\sqrt[3]{4}$ C) $\frac{11}{3}\sqrt[3]{4}$ D) $\frac{73}{12}\sqrt[3]{2}$

Answer: B

Rationalize the denominator. Assume that all variables represent nonnegative numbers and that the denominator is not zero.

464) $\frac{5}{7-\sqrt{2}}$

A) $\frac{35-5\sqrt{2}}{47}$ B) $\frac{35+5\sqrt{2}}{47}$ C) $\frac{35+5\sqrt{2}}{5}$ D) $\frac{5}{7} - \frac{5}{\sqrt{2}}$

Answer: B

465) $\frac{\sqrt{3}}{\sqrt{7}+2}$

A) $\frac{\sqrt{21}+2\sqrt{3}}{3}$ B) $\frac{\sqrt{21}-2\sqrt{3}}{9}$ C) $\frac{3\sqrt{21}+73}{14}$ D) $\frac{\sqrt{21}-2\sqrt{3}}{3}$

Answer: D

466) $\frac{7-\sqrt{2}}{7+\sqrt{2}}$

A) $\frac{51-14\sqrt{2}}{47}$ B) $\frac{47-14\sqrt{2}}{51}$ C) -1 D) $\frac{51+14\sqrt{2}}{47}$

Answer: A

467) $\frac{\sqrt{2}}{2\sqrt{7}-\sqrt{2}}$

A) $\frac{\sqrt{14}-1}{13}$ B) $\frac{\sqrt{14}+1}{13}$ C) $\frac{\sqrt{7}+1}{13}$ D) $\frac{\sqrt{14}+1}{15}$

Answer: B

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468) $\dfrac{2\sqrt{x}}{\sqrt{x}-3\sqrt{y}}$

A) $\dfrac{2\sqrt{x}(\sqrt{x}+3\sqrt{y})}{x-3y}$ B) $\dfrac{2\sqrt{x}(\sqrt{x}+3\sqrt{y})}{x+3y}$ C) $\dfrac{2\sqrt{x}(\sqrt{x}-3\sqrt{y})}{x+9y}$ D) $\dfrac{2\sqrt{x}(\sqrt{x}+3\sqrt{y})}{x-9y}$

Answer: D

469) $\dfrac{\sqrt{x}-\sqrt{y}}{\sqrt{3x}+\sqrt{7y}}$

A) $\dfrac{\sqrt{3x}-\sqrt{10xy}+\sqrt{7y}}{3x-7y}$ B) $\dfrac{x\sqrt{3}-\sqrt{7xy}-\sqrt{3xy}+y\sqrt{7}}{3x-7y}$

C) $\dfrac{\sqrt{3x}-\sqrt{10xy}+\sqrt{7y}}{3x+7y}$ D) $\dfrac{x\sqrt{3}-\sqrt{7xy}-\sqrt{3xy}+y\sqrt{7}}{3x+7y}$

Answer: B

470) $\dfrac{4}{\sqrt{x+h}-\sqrt{x}}$

A) $\dfrac{4(\sqrt{x+h}+\sqrt{x})}{h}$ B) $\dfrac{4\sqrt{x+h}+\sqrt{x}}{h}$ C) $\dfrac{4(\sqrt{x+h}-\sqrt{x})}{h}$ D) $\dfrac{4\sqrt{h}}{h}$

Answer: A

471) $\dfrac{a\sqrt{x}-5}{a\sqrt{x}+5}$

A) $\dfrac{a^2x-10a\sqrt{x}+25}{a^2x-25}$ B) $\dfrac{a^2x-10a\sqrt{x}-25}{a^2x+25}$ C) $\dfrac{a^2x+10a\sqrt{x}-25}{a^2x-25}$ D) $\dfrac{a^2x-10a\sqrt{x}+25}{a^2x+25}$

Answer: A

Solve the problem.

472) At an altitude of h feet above the surface of the earth, the approximate distance in miles that a person can see is given by $d = 1.2247\sqrt{h}$. How far can a person see if if he or she is 570 feet above the earth's surface? Round your answer to the nearest tenth of a mile.

A) 34.9 mi B) 31.6 mi C) 29.2 mi D) 30.3 mi

Answer: C

473) The formula $T = 0.07D^{1.5}$ can be used to approximate the duration of a storm, where is the time in hours and D is the diameter of the storm in miles. A storm that is 6.3 miles in diameter is heading toward a city. How long can the residents of the city expect the storm to last? Round you answer to the nearest hundredth of an hour.

A) 2.34 hr B) 0.54 hr C) 1.11 hr D) 2.64 hr

Answer: C

474) A formula for calculating the distance, d, one can see from an airplane to the horizon on a clear day is $d = 1.22x^{1/2}$, where x is the altitude of the plane in feet and d is given in miles. How far can one see in a plane flying at 28,000 feet? Round your answer to the nearest tenth mile, if necessary.

A) 17,080 mi B) 204.1 mi C) 1708 mi D) 184.8 mi

Answer: B

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475) The cost of manufacturing clocks is given by $c = 25(n + 100)^{1/2}$, where c is the cost in dollars and n is the number produced. What is the cost when no clocks are produced?

A) \$2500 B) \$50 C) \$25 D) \$250

Answer: D

476) The length of the diagonal of a rectangle is given by $D = \sqrt{L^2 + W^2}$ where L and W are the length and width of the rectangle. What is the length of the diagonal, D, of a rectangle that is 77 inches long and 41 inches wide? Round your answer to the nearest tenth of an inch, if necessary.

A) 65.2 in. B) 10.9 in. C) 56.2 in. D) 87.2 in.

Answer: D

477) The length of the diagonal of a box is given by $D = \sqrt{L^2 + W^2 + H^2}$ where L, W, and H are the length, width, and height of the box. Find the length of the diagonal, D, of a box that is 4 ft long, 2 ft high, and 4 ft wide. Give the exact value.

A) 10 ft B) $4\sqrt{2}$ ft C) 32 ft D) 6 ft

Answer: D

478) The radius of a sphere is given by the formula $r = \sqrt{\frac{S}{4\pi}}$, where S is the surface area. If the surface area is 5019 square inches, what is the radius? Use 3.14 for π, and round your answer to the nearest tenth of an inch.

A) 62.8 in. B) 35.4 in. C) 0.1 in. D) 20 in.

Answer: D

479) The radius of a right circular cone is given by the formula $r = \sqrt{\frac{3V}{\pi h}}$, where V is the volume and h is the height. If the volume is 316 cubic inches and the height is 7 inches, what is the radius? Use 3.14 for π, and round your answer to the nearest tenth of an inch.

A) 6.6 in. B) 6.9 in. C) 0.1 in. D) 3.8 in.

Answer: A

480) A simple exercise machine can be constructed by mounting a stiff spring securely to a wall and attaching a "T" handle to the free end of the spring. The arms can be exercised simply by pulling the "T" handle towards the torso. For a particular spring, the stretch distance is related to the work exerted by the equation $x = \sqrt{\frac{2W}{85000}}$, where W is the work exerted in joules and x is the stretch distance in cm. How far will you stretch the spring if you exert 631 joules of work? Round your answer to three decimal places.

A) 0.122 cm B) 0.086 cm C) 0.130 cm D) 0.015 cm

Answer: A

481) When determining appropriate doses of medication, it is sometimes important to estimate the body surface area (BSA) of a patient. This surface area (in m^2) can be approximated using the Mosteller formula $BSA = \left(\frac{h \cdot w}{3600}\right)^{1/2}$, where h is the patient's height in centimeters and w is the weight in kilograms. Determine the BSA for a patient with height 179 cm and weight 82 kg. Round your answer to two decimal places.

A) 0.03 m^2 B) 4.08 m^2 C) 16.62 m^2 D) 2.02 m^2

Answer: D

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Determine whether the equation is linear or nonlinear.

482) $27x - \frac{1}{11} = 18$

A) linear B) nonlinear

Answer: A

483) $\frac{4}{x} + 1 = 12$

A) linear B) nonlinear

Answer: B

484) $\sqrt{7}x + 5 = 0$

A) linear B) nonlinear

Answer: A

485) $x^2 - 9 = 12$

A) linear B) nonlinear

Answer: B

486) $\frac{x - 6}{7x + 4} = 11$

A) linear B) nonlinear

Answer: B

487) $0.14x + 19 = 0.30$

A) linear B) nonlinear

Answer: A

Solve the problem.

488) Which one of the following equations is set up for direct use of the zero–factor property?

A) $2x^2 - 5x - 8 = 0$ B) $x^2 - x = 8$ C) $(2x - 5)^2 = 8$ D) $(2x - 5)(x - 8) = 0$

Answer: D

Solve the equation by the zero–factor property.

489) $x^2 + 4x - 21 = 0$

A) {–7, 3} B) {–7, –3} C) {–3, 7} D) {3, 7}

Answer: A

490) $2x^2 = 24x - 64$

A) $\{-8, -4\}$ B) $\{4, 8\}$ C) $\{-8, 4\}$ D) {8, 16}

Answer: B

491) $x^2 - 10x + 24 = 0$

A) {–6, –4} B) {20, 4} C) {6, 4} D) {5, – 5}

Answer: C

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492) $12x^2 + 32x + 21 = 0$

A) $\left\{\frac{7}{6}, \frac{3}{2}\right\}$ B) $\left\{-\frac{6}{7}, -\frac{3}{2}\right\}$ C) $\left\{\frac{6}{7}, \frac{2}{3}\right\}$ D) $\left\{-\frac{7}{6}, -\frac{3}{2}\right\}$

Answer: D

493) $x^2 + 14x + 40 = 0$

A) {–20, –8} B) $\{2\sqrt{10}, -2\sqrt{10}\}$ C) {4, 10} D) {–10, –4}

Answer: D

494) $4x^2 + 2x - 2 = 0$

A) $\{2, 0\}$ B) $\{2, 1\}$ C) $\{2, -1\}$ D) $\left\{\frac{1}{2}, -1\right\}$

Answer: D

Solve the problem.

495) Which one of the following equations is set up for direct use of the square root property?

A) $(3x + 7)(x - 1) = 0$ B) $(3x + 7)^2 = 1$ C) $3x^2 + 7x - 1 = 0$ D) $x^2 + x = 1$

Answer: B

Solve the equation by the square root property.

496) $x^2 = 64$

A) {±8i} B) {8} C) {32} D) {±8}

Answer: D

497) $x^2 = -225$

A) {112.5} B) {±15} C) {±15i} D) {15}

Answer: C

498) $x^2 = 8$

A) $\{\pm 2\sqrt{2}\}$ B) {64} C) {4} D) $\{\sqrt{8}\}$

Answer: A

499) $(x - 12)^2 = 49$

A) {5, 19} B) {19} C) {–5, –19} D) {–37}

Answer: A

500) $(x - 2)^2 = 2$

A) $\{2 + \sqrt{2}\}$ B) $\{2 \pm \sqrt{2}\}$ C) $\{\sqrt{2} - 2, -\sqrt{2 - 2}\}$ D) $\{\sqrt{2} - \sqrt{-2}\}$

Answer: B

501) $(9x + 6)^2 = 4$

A) $\left\{-\frac{4}{9}, -\frac{8}{9}\right\}$ B) $\left\{-\frac{4}{9}, 0\right\}$ C) $\left\{\frac{2}{9}\right\}$ D) $\left\{\frac{4}{9}, \frac{8}{9}\right\}$

Answer: A

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502) $(4x + 4)^2 = 17$

A) $\left\{\frac{-4 \pm \sqrt{17}}{4}\right\}$ B) $\left\{\pm \frac{\sqrt{3}}{4}i\right\}$ C) $\left\{\frac{-4 + \sqrt{17}}{4}\right\}$ D) $\{-4 \pm \sqrt{17}\}$

Answer: A

503) $(x + 4)^2 = -2$

A) $\{-4 \pm i\sqrt{2}\}$ B) $\{-2, 6\}$ C) $\{-2 - \sqrt{2}\}$ D) $\{-4 \pm \sqrt{2}\}$

Answer: A

Solve the equation using the quadratic formula.

504) $x^2 - 6x + 58 = 0$

A) $\{6 \pm 14i\}$ B) $\{3 \pm 7i\}$ C) $\{10, -4\}$ D) $\{-3 \pm 7i\}$

Answer: B

505) $x^2 + x + 3 = 0$

A) $\left\{-\frac{1}{2} \pm \frac{\sqrt{11}}{2}i\right\}$ B) $\left\{\frac{-1 \pm \sqrt{11}}{2}\right\}$ C) $\left\{\frac{1}{2} \pm \frac{\sqrt{11}}{2}i\right\}$ D) $\left\{\frac{1 \pm \sqrt{11}}{2}\right\}$

Answer: A

506) $6x^2 + 12x + 3 = 0$

A) $\left\{\frac{-12 \pm \sqrt{2}}{2}\right\}$ B) $\left\{\frac{-2 \pm \sqrt{2}}{12}\right\}$ C) $\left\{\frac{-2 \pm \sqrt{2}}{2}\right\}$ D) $\left\{\frac{-2 \pm \sqrt{6}}{2}\right\}$

Answer: C

507) $5x^2 + 12x = -6$

A) $\left\{\frac{-6 \pm \sqrt{66}}{5}\right\}$ B) $\left\{\frac{-12 \pm \sqrt{6}}{5}\right\}$ C) $\left\{\frac{-6 \pm \sqrt{6}}{5}\right\}$ D) $\left\{\frac{-6 \pm \sqrt{6}}{10}\right\}$

Answer: C

508) $3x^2 = -10x - 1$

A) $\left\{\frac{-5 \pm \sqrt{7}}{3}\right\}$ B) $\left\{\frac{-5 \pm \sqrt{22}}{6}\right\}$ C) $\left\{\frac{-5 \pm \sqrt{22}}{3}\right\}$ D) $\left\{\frac{-10 \pm \sqrt{22}}{3}\right\}$

Answer: C

509) $\frac{4}{9}x^2 - \frac{4}{3}x = -1$

A) $\left\{\frac{2}{3}\right\}$ B) $\left\{\frac{3 \pm 2\sqrt{2}}{2}\right\}$ C) $\left\{-\frac{3}{2}\right\}$ D) $\left\{\frac{3}{2}\right\}$

Answer: D

510) $3 = -\frac{9}{x} - \frac{3}{x^2}$

A) $\left\{\frac{-3 \pm \sqrt{5}}{2}\right\}$ B) $\left\{\frac{-3 \pm \sqrt{13}}{2}\right\}$ C) $\left\{\frac{-3 \pm \sqrt{5}}{6}\right\}$ D) $\left\{\frac{-9 \pm \sqrt{5}}{2}\right\}$

Answer: A

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511) $(x + 6)(x - 1) = 6$

A) $\left\{\frac{5 \pm \sqrt{73}}{2}\right\}$ B) $\left\{\frac{-5}{2} \pm \frac{i\sqrt{73}}{2}\right\}$ C) $\left\{\frac{-5 \pm \sqrt{73}}{2}\right\}$ D) $\left\{-\frac{-5}{2} \pm \frac{i\sqrt{73}}{2}\right\}$

Answer: C

512) $(2x - 1)(x + 1) = 1$

A) $\left\{\frac{-1 \pm \sqrt{17}}{4}\right\}$ B) $\left\{\frac{1 \pm \sqrt{17}}{4}\right\}$ C) $\left\{\frac{-1 \pm \sqrt{21}}{2}\right\}$ D) $\left\{\frac{1 \pm \sqrt{17}}{2}\right\}$

Answer: A

Write the inequality in interval notation.

513) $x > -9$

A) $(-\infty, -9]$ B) $(-9, \infty)$ C) $[-9, \infty)$ D) $(-9, \infty]$

Answer: B

514) $6 \le x < 9$

A) $(6, 9]$ B) $(6, 9)$ C) $[6, 9)$ D) $[6, 9]$

Answer: C

515) $-6 \le x$

A) $[-6, \infty)$ B) $(-6, \infty)$ C) $(-\infty, -6]$ D) $[-6, \infty]$

Answer: A

516) $-4 > x \ge -9$

A) $(-9, -4]$ B) $(-9, -4)$ C) $[-9, -4]$ D) $[-9, -4)$

Answer: D

517) $-8 < x \le 3$

A) $(-8, 3]$ B) $[-8, 3)$ C) $[-8, 3]$ D) $(-8, 3)$

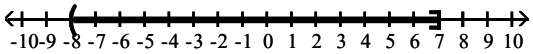
Answer: A

518) $-3 < x < 6$

A) $[-3, 6]$ B) $[-3, 6)$ C) $(-3, 6)$ D) $(-3, 6]$

Answer: C

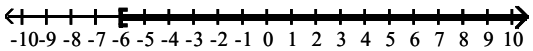
519)



A) $(-8, 7]$ B) $(-6, 9]$ C) $[-8, 7)$ D) $[-7, 8)$

Answer: A

520)

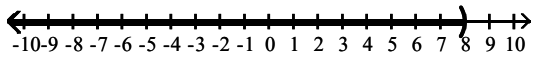


A) $(-\infty, 7]$ B) $[7, \infty)$ C) $[-6, \infty)$ D) $(-\infty, -6]$

Answer: C

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521)



A) $(-\infty, \infty]$ B) $(-\infty, -9]$ C) $(-\infty, 8)$ D) $(8, \infty)$

Answer: C

Solve the equation.

522) $2x + 2 = x - 1$

A) $\left\{-\frac{3}{2}\right\}$ B) $\{-3\}$ C) $\left\{\frac{1}{2}\right\}$ D) $\{1\}$

Answer: B

523) $2x - 2 + 2(x + 1) = 6x - 4$

A) $\{-4\}$ B) $\{4\}$ C) $\{-2\}$ D) $\{2\}$

Answer: D

524) $5[-3x - 1 - 6(x + 1)] = 5x - 6$

A) $\left\{-\frac{29}{50}\right\}$ B) $\left\{-\frac{19}{3}\right\}$ C) $\left\{-\frac{29}{3}\right\}$ D) $\left\{-\frac{19}{50}\right\}$

Answer: A

525) $\frac{x - 8}{4} = \frac{x - 8}{3}$

A) $\left\{-\frac{8}{7}\right\}$ B) $\{56\}$ C) $\{8\}$ D) $\{24\}$

Answer: C

526) $1 - \frac{7}{8x} = \frac{8}{2}$

A) $\{-2\}$ B) $\left\{-\frac{7}{24}\right\}$ C) $\left\{\frac{7}{3}\right\}$ D) $\left\{\frac{7}{24}\right\}$

Answer: B

527) $-7x + 4 + 3(x + 1) = -(5x + 2)$

A) $\{-5\}$ B) $\{-9\}$ C) $\left\{\frac{5}{7}\right\}$ D) $\left\{\frac{9}{7}\right\}$

Answer: B

528) $-3[6x - 5 + 5(x + 1)] = -6x + 1$

A) $\left\{-\frac{31}{27}\right\}$ B) $\left\{\frac{31}{6}\right\}$ C) $\left\{\frac{1}{6}\right\}$ D) $\left\{-\frac{1}{27}\right\}$

Answer: D

529) $\frac{5x}{7} - 12 = x$

A) {84} B) {−42} C) {168} D) {42}

Answer: B

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530) $\frac{x-4}{5} = \frac{x+3}{7}$

A) $\left\{\frac{43}{12}\right\}$ B) $\left\{-\frac{13}{2}\right\}$ C) $\left\{\frac{19}{2}\right\}$ D) $\left\{\frac{43}{2}\right\}$

Answer: D

531) $-8.2x + 1.2 = -24.8 - 1.7x$

A) {3.4} B) {3.2} C) {4} D) {–32}

Answer: C

Decide whether the equation is an identity, a conditional equation, or a contradiction. Give the solution set.

532) $40x + 20 = 5(4x + 20)$

A) Conditional; {4} B) Identity; {all real numbers}
C) Conditional; {–6} D) Contradiction; ∅

Answer: A

533) $2(12x + 12) = 6(2x + 16)$

A) Conditional; {–10} B) Identity; {all real numbers}
C) Conditional; {6} D) Contradiction; ∅

Answer: C

534) $5(2x - 31) = 10x - 155$

A) Identity; {all real numbers} B) Conditional; {0}
C) Identity; ∅ D) Contradiction; ∅

Answer: A

535) $6(x + 4) + (-15x) = -9(x - 3) + 15$

A) Identity; {all real numbers} B) Conditional; {10}
C) Conditional; {0} D) Contradiction; ∅

Answer: D

536) $24(x + 2) = 3(8x + 1) + 45$

A) Conditional; {0} B) Conditional; {48}
C) Contradiction; ∅ D) Identity; {all real numbers}

Answer: D

537) $4(5x + 18) - 20x - 72 = 0$

A) Conditional; {5} B) Conditional; {0}
C) Contradiction; ∅ D) Identity; {all real numbers}

Answer: D

538) $10x + 13 = 2(5x + 2)$

A) Conditional; {–5} B) Identity; {all real numbers}
C) Contradiction; ∅ D) Conditional; {5}

Answer: C

539) $-10x + 22 + 2(5x - 8) = 0$

A) Contradiction; ∅ B) Identity; {all real numbers}
C) Conditional; {5} D) Conditional; {1}

Answer: A

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540) $4x + 5(x + 1) + 2 = 7 - 5x$

A) Identity; {all real numbers}
B) Conditional; {0}
C) Contradiction; ∅
D) Conditional; {1}

Answer: B

541) $2[3 - (7 - 5x)] - x = -14 + 3(2 + 3x)$

A) Conditional; {–7}
B) Conditional; {14}
C) Contradiction; ∅
D) Identity; {all real numbers}

Answer: D

542) $-0.9(x + 1) + 0.7(x + 1) = -0.2x - 0.2$

A) Identity; {all real numbers}
B) Contradiction; ∅
C) Conditional; {–0.2}
D) Conditional; {–1}

Answer: A

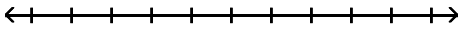
543) $0.9(x - 7) - 0.5(x - 7) = 0.4x - 2.8$

A) Conditional; {–7}
B) Identity; {all real numbers}
C) Contradiction; ∅
D) Conditional; {1.4}

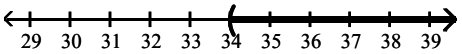
Answer: B

Solve and graph the inequality. Give answer in interval notation.

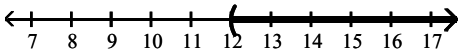
544) $-4x + 11 > -5x + 23$



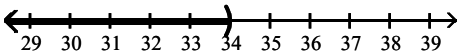
A) (34, ∞)



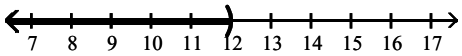
B) (12, ∞)



C) (–∞, 34)

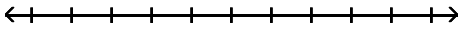


D) (–∞, 12)

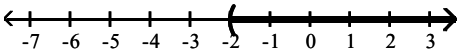


Answer: B

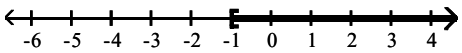
545) $-2x - 4 \leq -3x - 5$



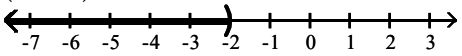
A) (–2, ∞)



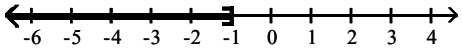
B) [–1, ∞)



C) (–∞, –2)



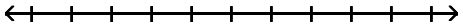
D) (–∞, –1]



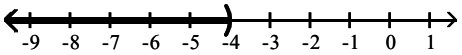
Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

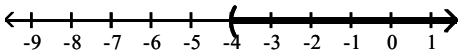
546) $-4x - 4 \geq -5x - 3$



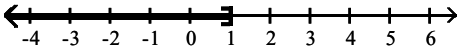
A) $(-\infty, -4)$



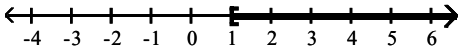
B) $(-4, \infty)$



C) $(-\infty, 1]$

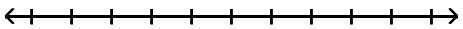


D) $[1, \infty)$

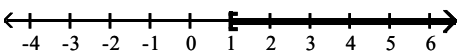


Answer: D

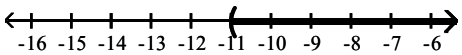
547) $-11x - 12 \geq -10x - 11$



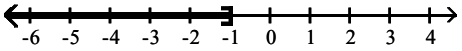
A) $[1, \infty)$



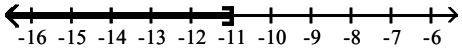
B) $(-11, \infty)$



C) $(-\infty, -1]$

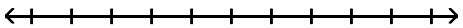


D) $(-\infty, -11]$

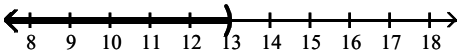


Answer: C

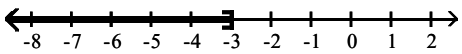
548) $-8 + 13x + 10 \geq 12x - 1$



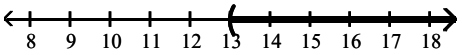
A) $(-\infty, 13)$



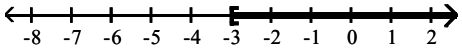
B) $(-\infty, -3]$



C) $(13, \infty)$

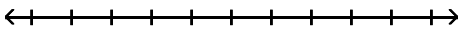


D) $[-3, \infty)$

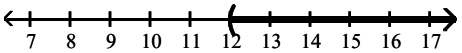


Answer: D

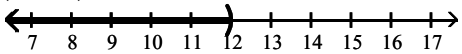
549) $12x - 9 > 3(3x - 8)$



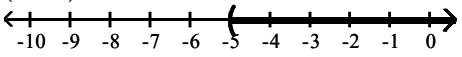
A) $(12, \infty)$



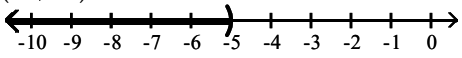
B) $(-\infty, 12)$



C) $(-5, \infty)$



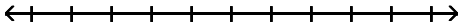
D) $(-\infty, -5)$



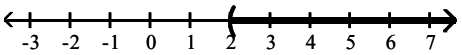
Answer: C

Access Complete Test Bank for Trigonometry 12th Lial

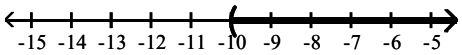
550) $-2(4x - 5) < -10x + 14$



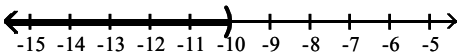
A) $(2, \infty)$



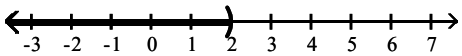
B) $(-10, \infty)$



C) $(-\infty, -10)$

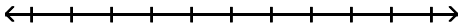


D) $(-\infty, 2)$

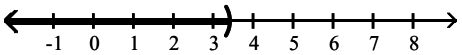


Answer: D

551) $\frac{8x + 5}{6} < \frac{43}{8}$

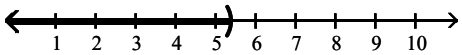


A) $\left(-\infty, \frac{109}{32}\right)$



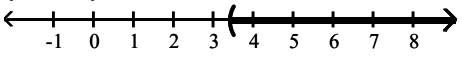
$\frac{109}{32}$

B) $\left(-\infty, \frac{43}{8}\right)$



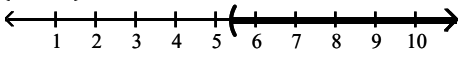
$\frac{43}{8}$

C) $\left(\frac{109}{32}, \infty\right)$



$\frac{109}{32}$

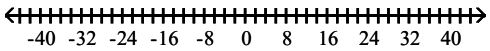
D) $\left(\frac{43}{8}, \infty\right)$



$\frac{43}{8}$

Answer: A

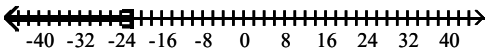
552) $\frac{x}{6} - \frac{2}{3} \le \frac{x}{3} + 3$



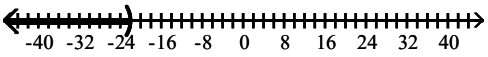
A) $[-22, \infty)$



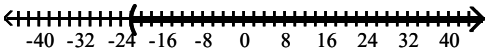
B) $(-\infty, -22]$



C) $(-\infty, -22)$



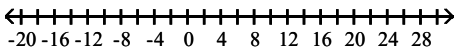
D) $(-22, \infty)$



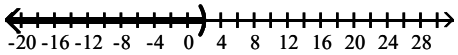
Answer: A

Access Complete Test Bank for Trigonometry 12th Lial

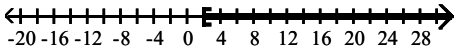
553) $\frac{x-1}{25} \geq \frac{x-1}{30} + \frac{1}{150}$



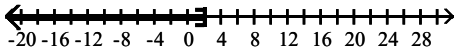
A) $(-\infty, 2)$



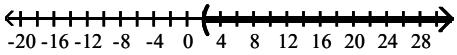
B) $[2, \infty)$



C) $(-\infty, 2]$

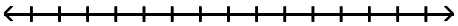


D) $(2, \infty)$

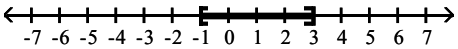


Answer: B

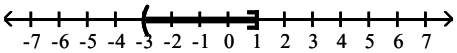
554) $-12 < -4x \leq 4$



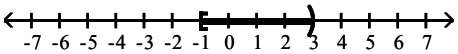
A) $[-1, 3]$



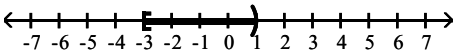
B) $(-3, 1]$



C) $[-1, 3)$

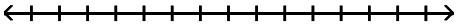


D) $[-3, 1)$

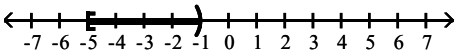


Answer: C

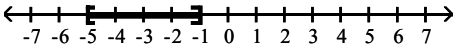
555) $-18 < 4x + 2 \leq -2$



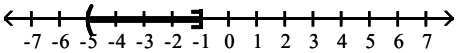
A) $[-5, -1)$



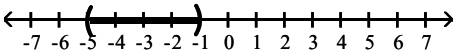
B) $[-5, -1]$



C) $(-5, -1]$

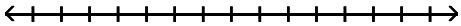


D) $(-5, -1)$

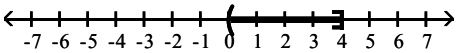


Answer: C

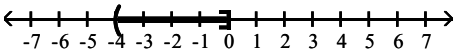
556) $-12 < -4x + 4 \leq 4$



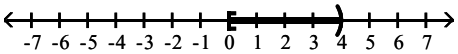
A) $(0, 4]$



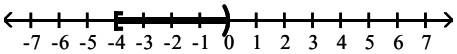
B) $(-4, 0]$



C) $[0, 4)$



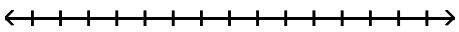
D) $[-4, 0)$



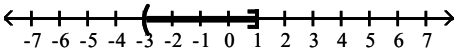
Answer: C

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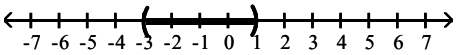
557) $9 > 5x + 4 \geq -11$



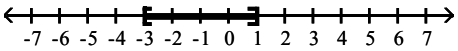
A) (–3, 1]



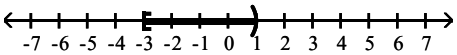
B) (–3, 1)



C) [–3, 1]

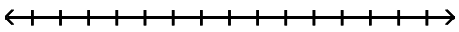


D) [–3, 1)

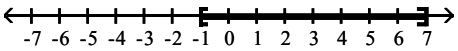


Answer: D

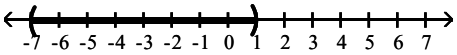
558) $-1 \leq \frac{x + 1}{2} \leq 3$



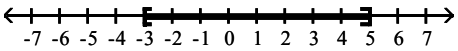
A) [–1, 7]



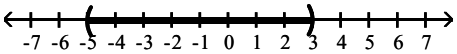
B) (–7, 1)



C) [–3, 5]

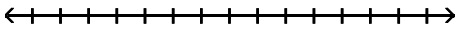


D) [–5, 3]

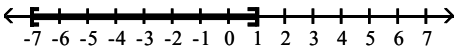


Answer: C

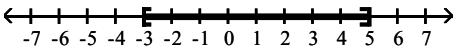
559) $-1 \leq \frac{x + 1}{-2} \leq 3$



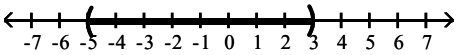
A) [–7, 1]



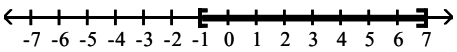
B) (–3, 5)



C) [–5, 3]



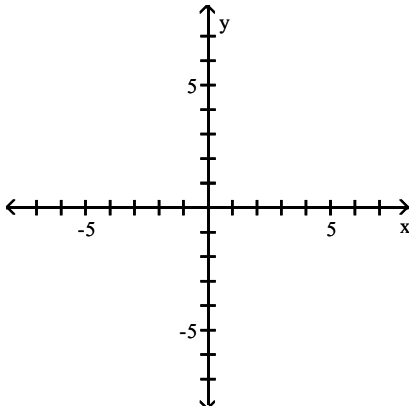
D) (–1, 7)



Answer: A

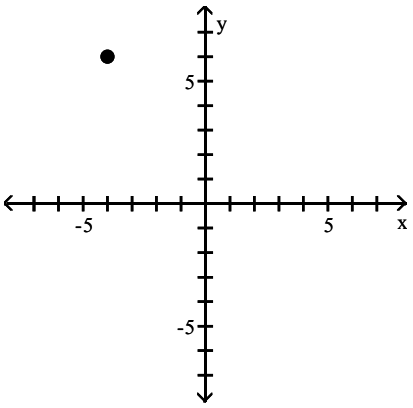
Graph the points on a coordinate system and identify the quadrant or axis for each point.

560) (4, 6)

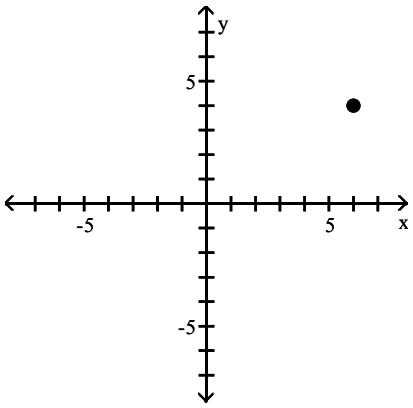


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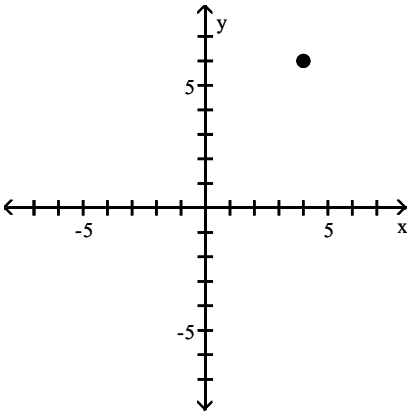
A) Quadrant II



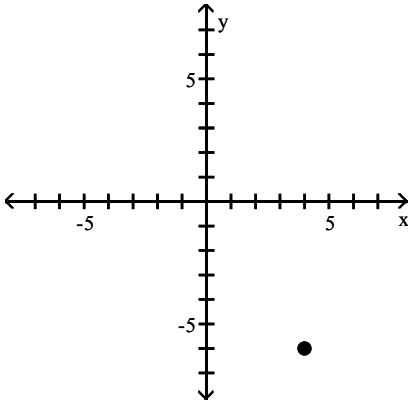
B) Quadrant I



C) Quadrant I

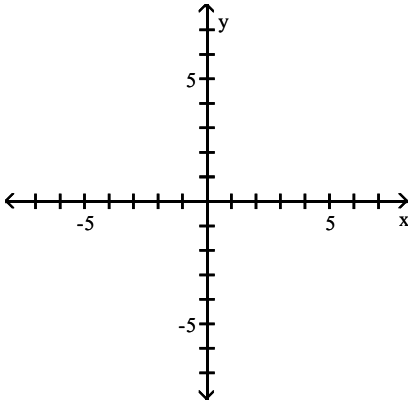


D) Quadrant IV



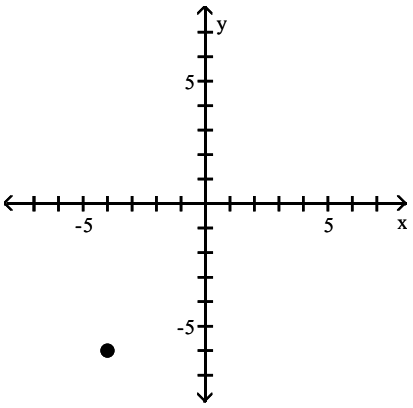
Answer: C

561) (−4, 6)

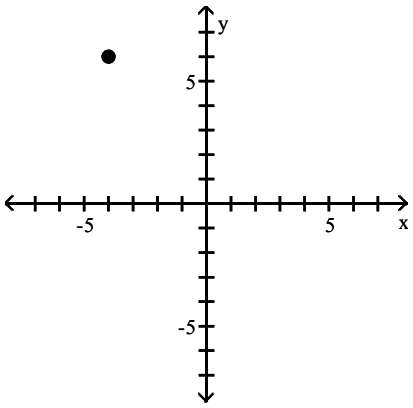


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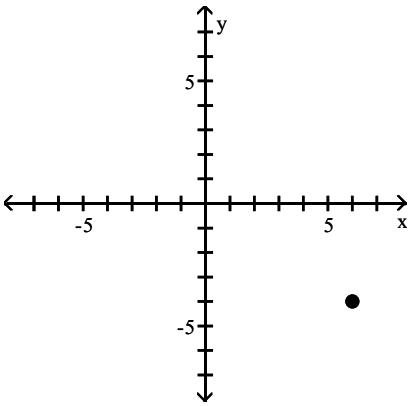
A) Quadrant III



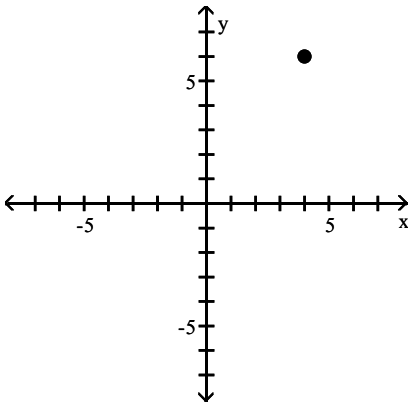
B) Quadrant II



C) Quadrant IV

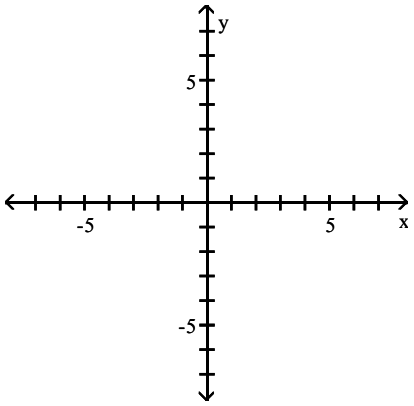


D) Quadrant I

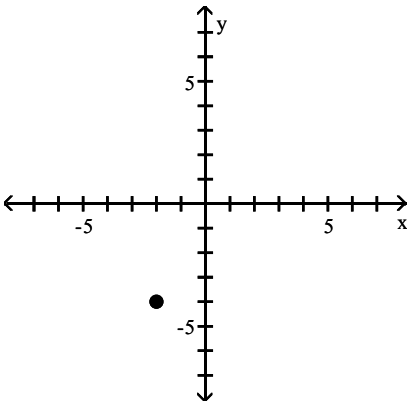


Answer: B

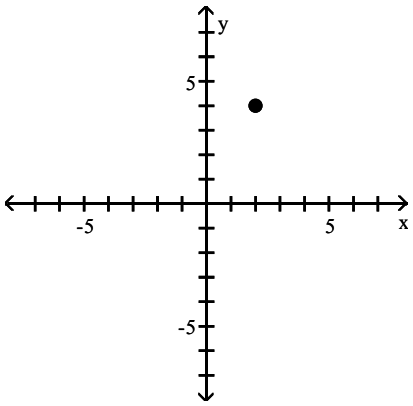
562) (2, –4)



A) Quadrant III

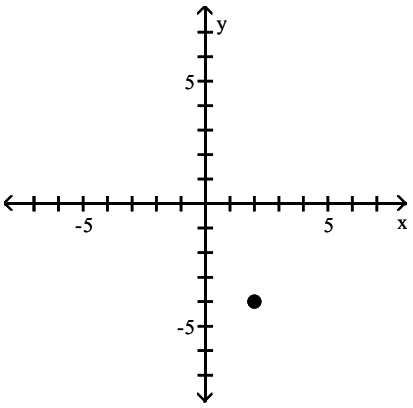


B) Quadrant I

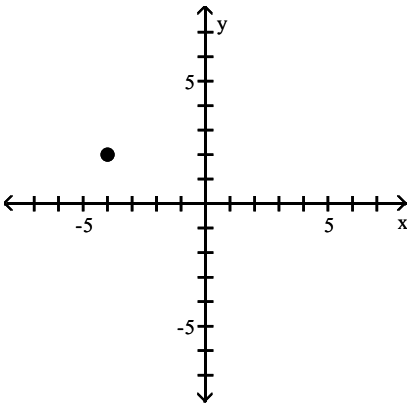


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C) Quadrant IV

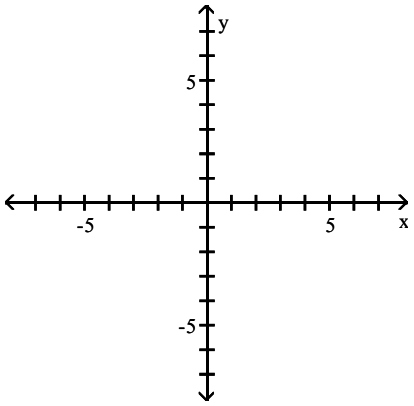


D) Quadrant II

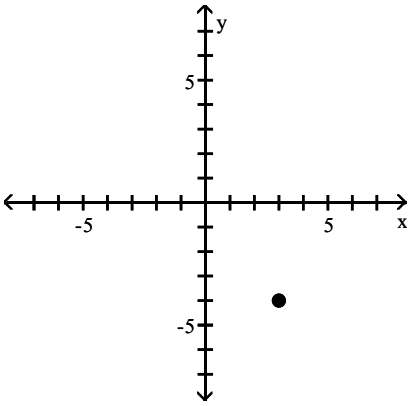


Answer: C

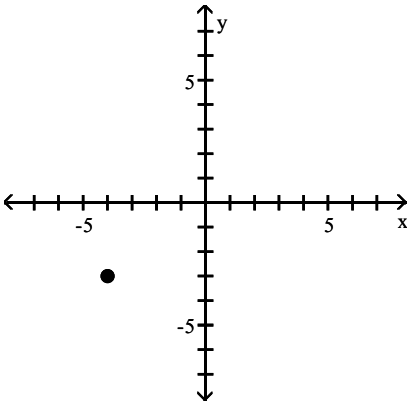
563) (–3, –4)



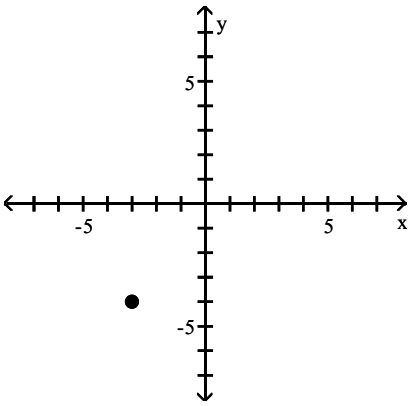
A) Quadrant IV



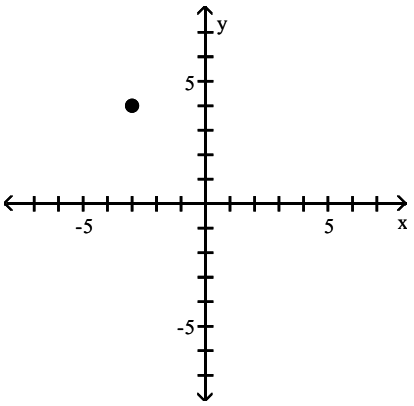
B) Quadrant III



C) Quadrant III



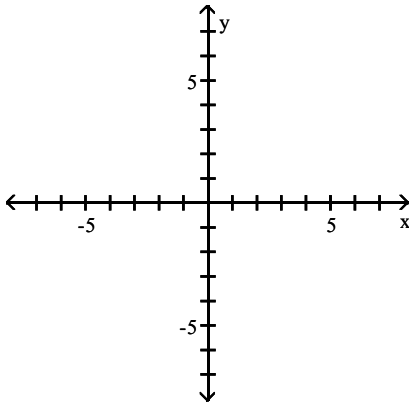
D) Quadrant II



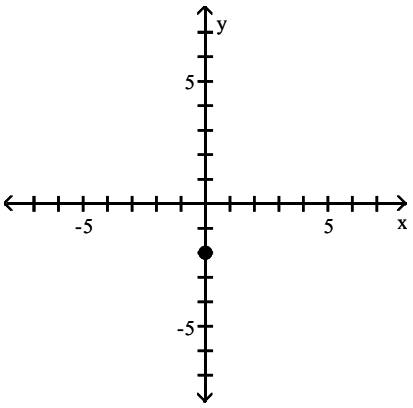
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Answer: C

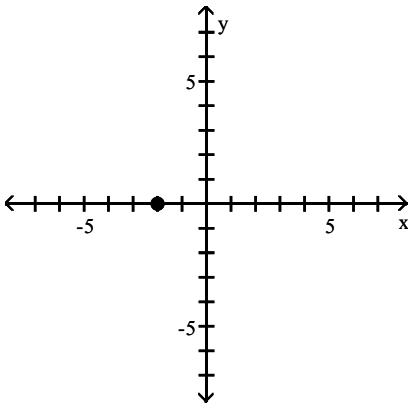
564) (0, –2)



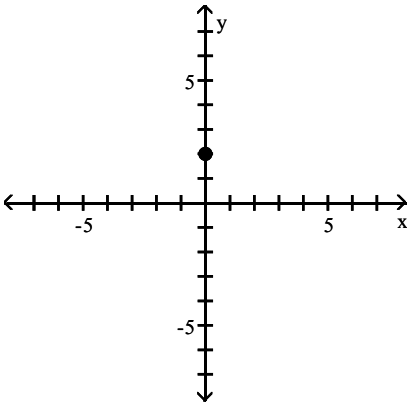
A) y–axis



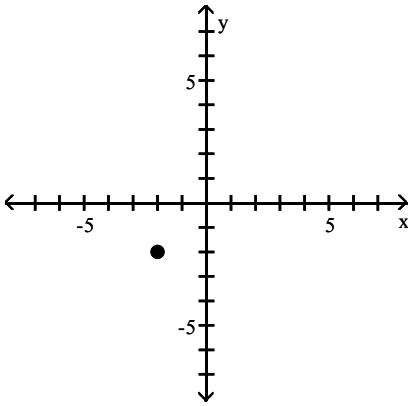
B) x–axis



C) y–axis



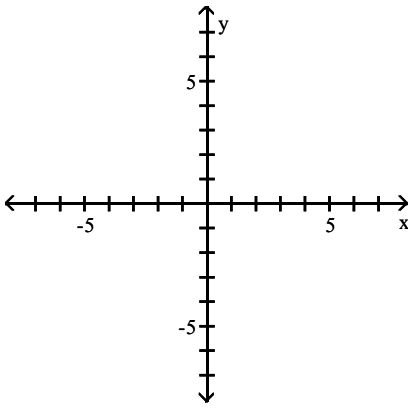
D) Quadrant II



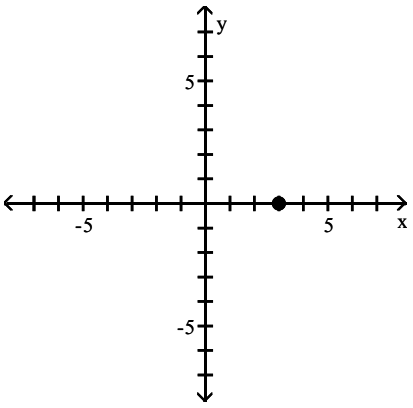
Answer: A

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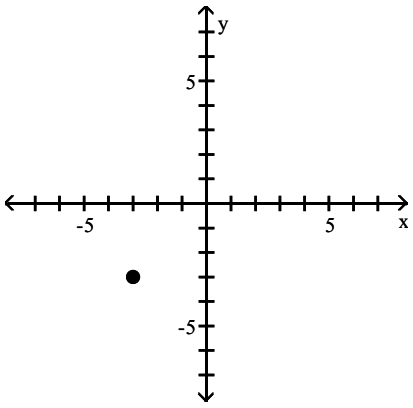
565) (–3, 0)



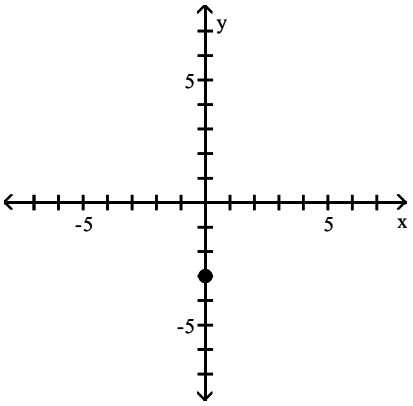
A) x–axis



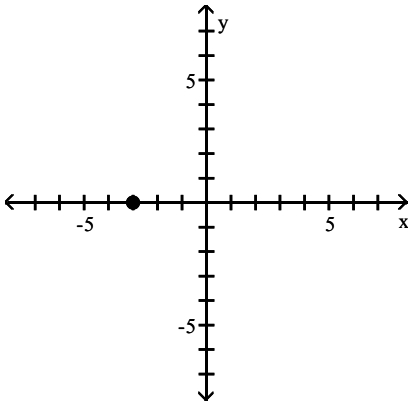
B) Quadrant II



C) y–axis



D) x–axis



Answer: D

Provide an appropriate response.

566) If the point (a, b) is in the fourth quadrant, in what quadrant is (a, –b)?

A) IV B) III C) II D) I

Answer: D

567) If the point (a, b) is in the fourth quadrant, in what quadrant is (–a, –b)?

A) II B) IV C) I D) III

Answer: A

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568) If the point (a, b) is in the fourth quadrant, in what quadrant is (b, a)?

A) III B) I C) II D) IV

Answer: C

569) If a vertical line is drawn through the point (9, –2), where will it intersect the x–axis?

A) (9, 0) B) (0, –2) C) (–2, 0) D) (0, 9)

Answer: A

570) If a horizontal line is drawn through the point (–9, 4), where will it intersect the y–axis?

A) (0, –9) B) (–9, 0) C) (4, 0) D) (0, 4)

Answer: D

For the points P and Q, find the coordinates of the midpoint of the segment PQ.

571) P(6, 4), Q(0, 5)

A) (6, 9) B) $\left(3, -\frac{1}{2}\right)$ C) $\left(3, \frac{9}{2}\right)$ D) (6, –1)

Answer: C

572) P(9, –1), Q(–7, 8)

A) $\left(8, -\frac{9}{2}\right)$ B) $\left(1, \frac{7}{2}\right)$ C) (2, 7) D) (16, –9)

Answer: B

573) P(–2, –2), Q(7, 1)

A) $\left(-\frac{9}{2}, -\frac{3}{2}\right)$ B) $\left(\frac{5}{2}, -\frac{1}{2}\right)$ C) (–9, –3) D) (5, –1)

Answer: B

574) P(–6, –5), Q(–5, –6)

A) $\left(-\frac{11}{2}, -\frac{11}{2}\right)$ B) (–11, –11) C) (–1, 1) D) $\left(-\frac{1}{2}, \frac{1}{2}\right)$

Answer: A

575) P($13\sqrt{3}$, $-\sqrt{13}$), Q($-\sqrt{3}$, 0)

A) $\left(6\sqrt{3}, -\frac{\sqrt{13}}{2}\right)$ B) $\left(7\sqrt{3}, \frac{\sqrt{13}}{2}\right)$ C) (–3, 13) D) $\left(6\sqrt{6}, -\frac{\sqrt{39}}{2}\right)$

Answer: A

576) P($11\sqrt{5}$, $\sqrt{13}$), Q($-\sqrt{5}$, $4\sqrt{13}$)

A) $\left(5\sqrt{5}, \frac{5\sqrt{13}}{2}\right)$ B) $\left(5\sqrt{10}, -\frac{\sqrt{39}}{2}\right)$ C) $\left(5\sqrt{5}, 5\sqrt{13}\right)$ D) $\left(6\sqrt{5}, \frac{\sqrt{13}}{2}\right)$

Answer: A

577) P($-\sqrt{5}$, 1), Q(0, $\sqrt{2}$)

A) $\left(-\frac{\sqrt{5}}{2}, \frac{1+\sqrt{2}}{2}\right)$ B) $\left(\frac{\sqrt{5}}{2}, \frac{1-\sqrt{2}}{2}\right)$ C) $(-\sqrt{5}, 1+\sqrt{2})$ D) $\left(\frac{-\sqrt{5}+\sqrt{2}}{2}, \frac{1}{2}\right)$

Answer: A

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Provide an appropriate response.

578) Are the points A(1, 4), B(4, 7), C(6, –1), and D(9, 2) the vertices of a parallelogram (opposite sides equal in length)? of a rhombus (all sides equal in length)?

A) no; yes B) yes; no C) yes; yes D) no; no

Answer: B

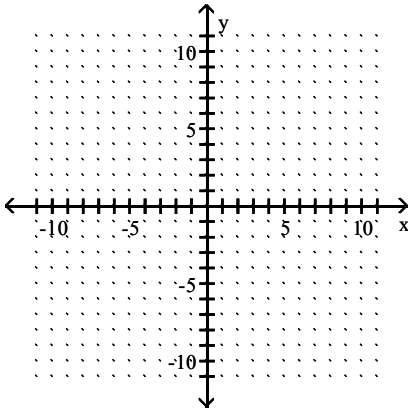
579) Are the points A(–1, 8), B(2, 7), C(4, –1), and D(7, 2) the vertices of a parallelogram (opposite sides equal in length)? of a rhombus (all sides equal in length)?

A) no; yes B) no; no C) yes; no D) yes; yes

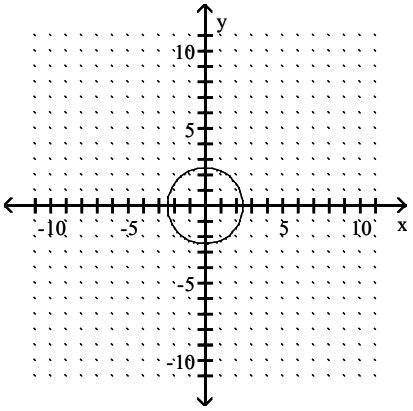
Answer: B

Graph the circle.

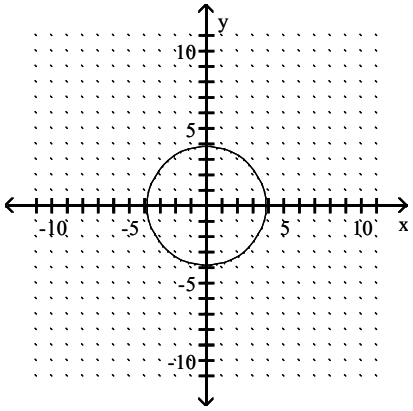
580) $x^2 + y^2 = 36$



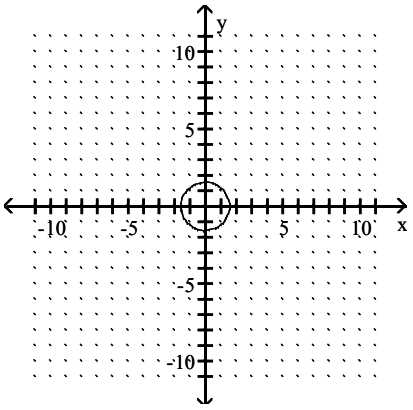
A)



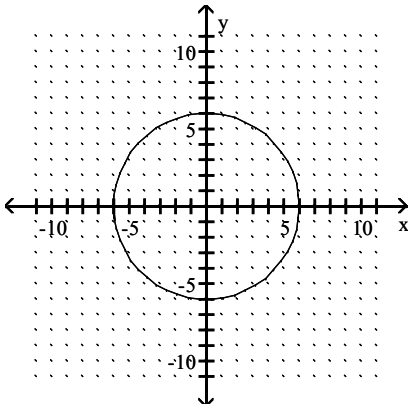
B)



C)



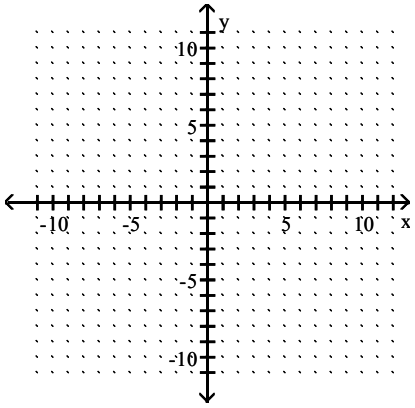
D)



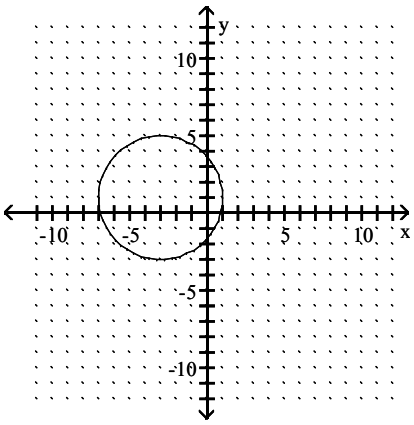
Answer: D

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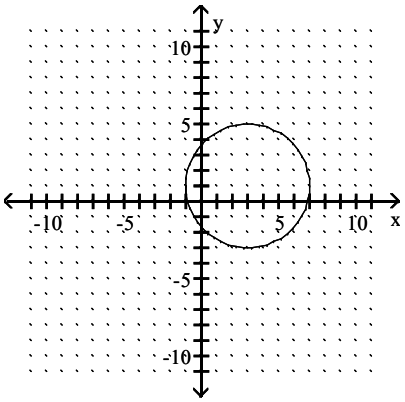
581) $(x - 3)^2 + (y + 1)^2 = 16$



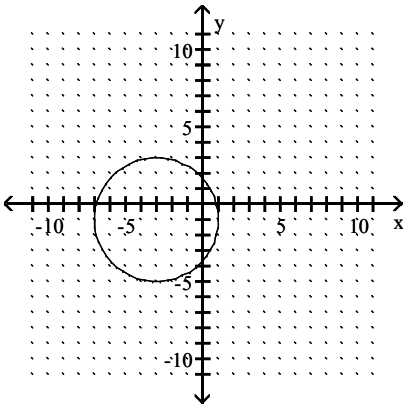
A)



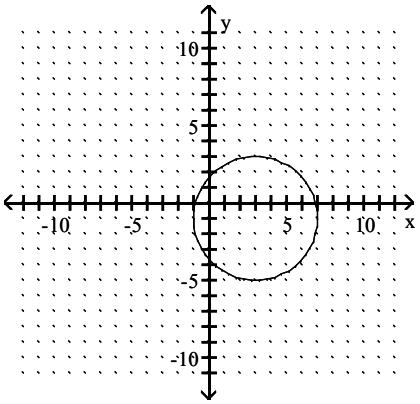
B)



C)



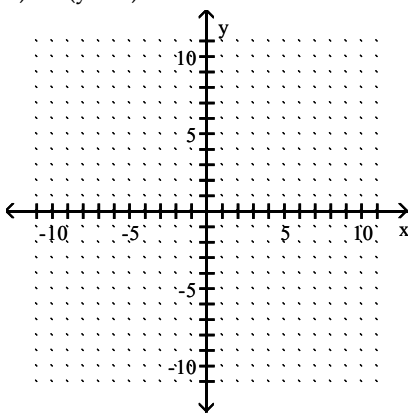
D)



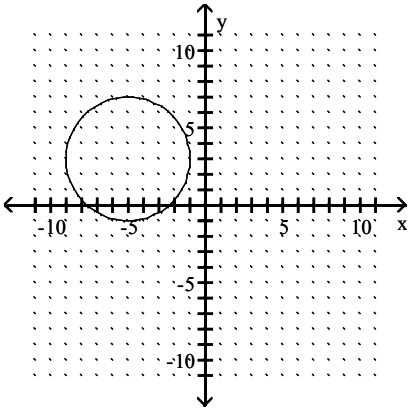
Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

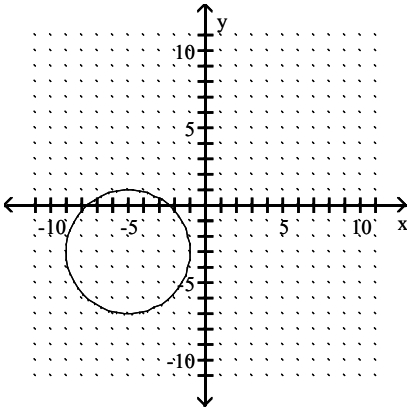
582) $(x - 5)^2 + (y + 3)^2 = 16$



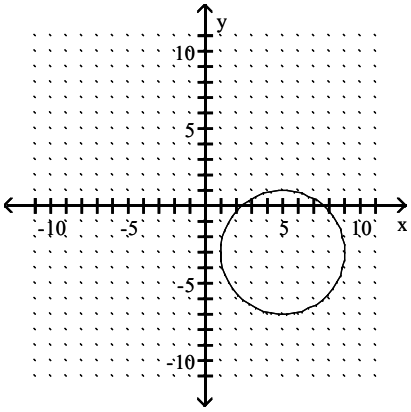
A)



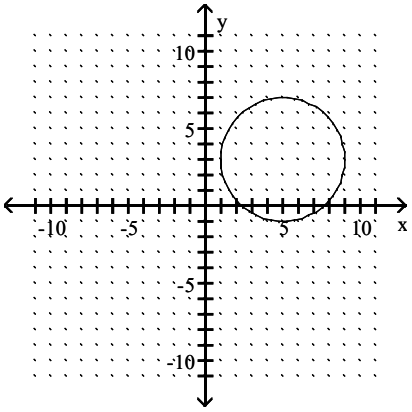
B)



C)



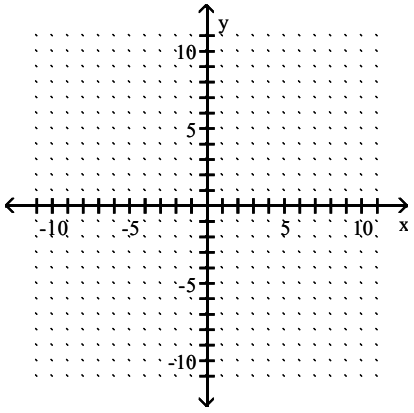
D)



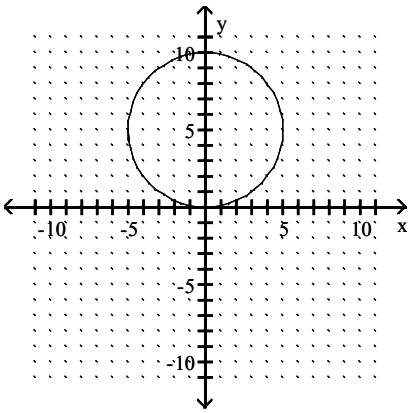
Answer: C

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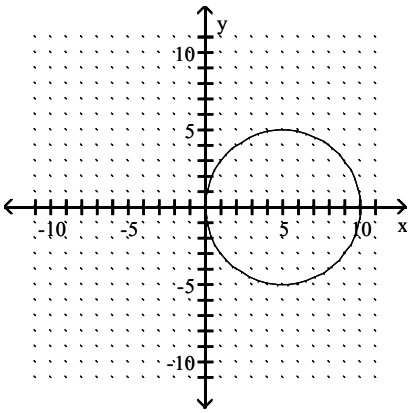
583) $x^2 + (y - 5)^2 = 25$



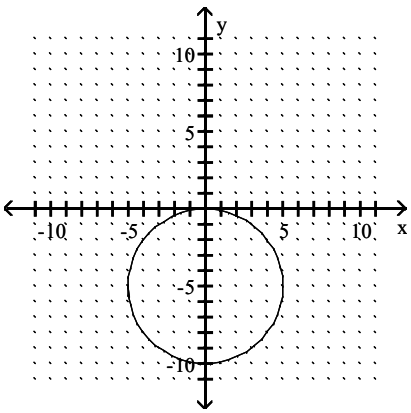
A)



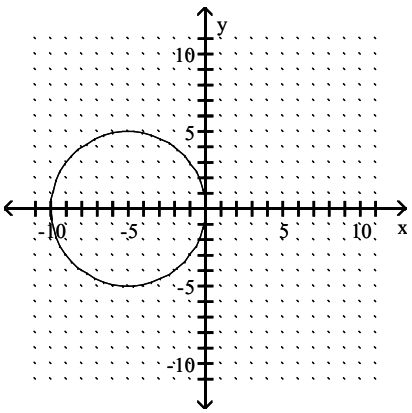
B)



C)



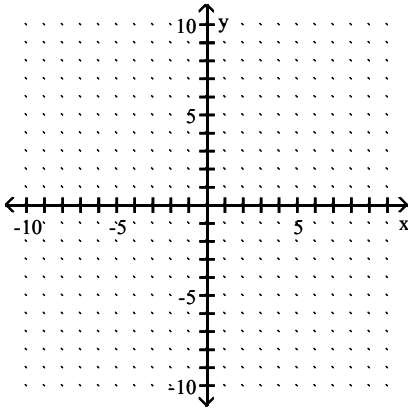
D)



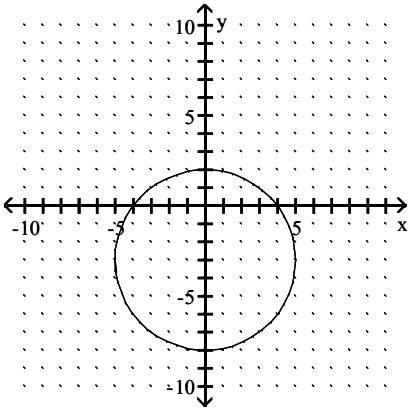
Answer: A

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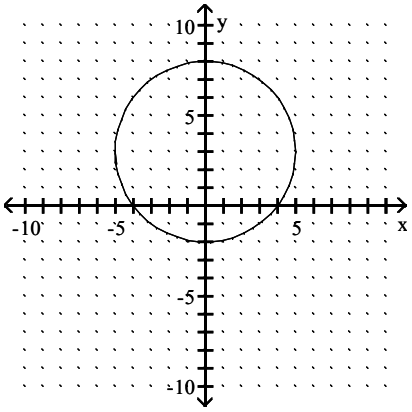
584) $(x + 3)^2 + y^2 = 25$



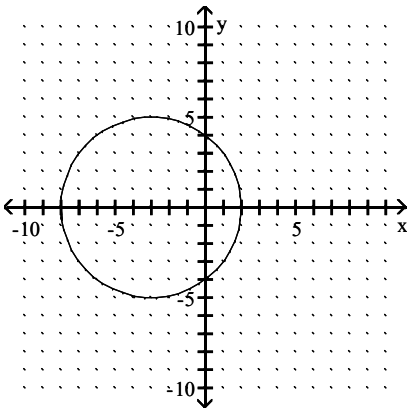
A)



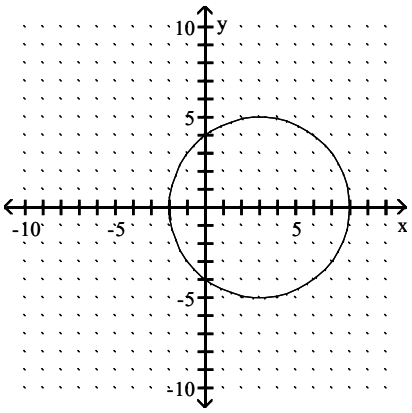
B)



C)



D)



Answer: C

Find the center–radius form of the equation of the circle.

585) center (0, 0), radius 3

A) $x^2 + y^2 = 9$ B) $x^2 + y^2 = \sqrt{3}$ C) $x^2 + y^2 = 3$ D) $x^2 + y^2 = 6$

Answer: A

586) center (4, –8), radius 4

A) $(x + 8)^2 + (y - 4)^2 = 4$ B) $(x - 8)^2 + (y + 4)^2 = 4$

C) $(x + 4)^2 + (y - 8)^2 = 16$ D) $(x - 4)^2 + (y + 8)^2 = 16$

Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

587) center (8, 0), radius 8

A) $x^2 + (y + 8)^2 = 8$ B) $(x - 8)^2 + y^2 = 64$ C) $(x + 8)^2 + y^2 = 64$ D) $x^2 + (y - 8)^2 = 8$

Answer: B

588) center (0, 8), radius 5

A) $(x + 8)^2 + y^2 = 25$ B) $x^2 + (y + 8)^2 = 5$ C) $x^2 + (y - 8)^2 = 25$ D) $(x - 8)^2 + y^2 = 25$

Answer: C

589) center (9, 7), radius $\sqrt{14}$

A) $(x - 7)^2 + (y - 9)^2 = 196$ B) $(x - 9)^2 + (y - 7)^2 = 14$

C) $(x + 9)^2 + (y + 7)^2 = 14$ D) $(x + 7)^2 + (y + 9)^2 = 196$

Answer: B

590) center (0, 10), radius $\sqrt{11}$

A) $(x + 10)^2 + y^2 = 121$ B) $x^2 + (y - 10)^2 = 11$ C) $(x - 10)^2 + y^2 = 121$ D) $x^2 + (y + 10)^2 = 11$

Answer: B

591) center (–9, 0), radius $\sqrt{17}$

A) $(x - 9)^2 + y^2 = 17$ B) $x^2 + (y + 9)^2 = 289$ C) $(x + 9)^2 + y^2 = \sqrt{17}$ D) $(x + 9)^2 + y^2 = 17$

Answer: D

592) center $(-\sqrt{6}, 4)$, radius $\sqrt{6}$

A) $(x - \sqrt{6})^2 + (y + 4)^2 = 6$ B) $(x + \sqrt{6})^2 + (y - 4)^2 = 6$

C) $(x - \sqrt{6})^2 + (y + 4)^2 = 36$ D) $(x + \sqrt{6})^2 + (y - 4)^2 = \sqrt{6}$

Answer: B

List the ordered pairs from the table.

593)

x	y
–3	6
–2	5
0	3
1	2

A) (–3, 6), (–2, 5), (0, 3), (1, 2) B) (–3, 2), (–2, 3), (0, 5), (1, 6)

C) (–3, 5), (–2, 6), (0, 2), (1, 3) D) (6, –3), (5, –2), (3, 0), (2, 1)

Answer: A

594)

Sales at the University Bookstore

Month	Sales
1	$660,000
2	$170,000
3	$1,070,000
4	$310,000

A) (310,000, 1), (1,070,000, 2), (170,000, 3), (660,000, 4)

B) (660,000, 1), (170,000, 2), (1,070,000, 3), (310,000, 4)

C) (1, 660,000), (2, 170,000), (3, 1,070,000), (4, 310,000)

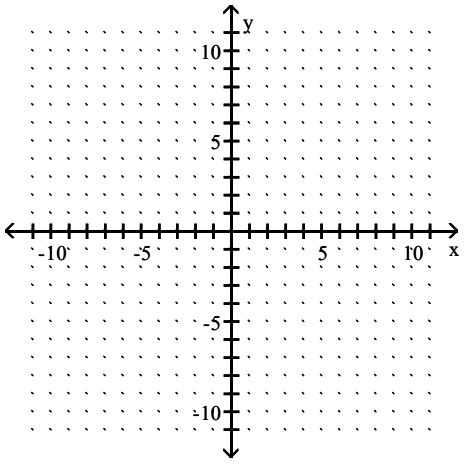
D) (1, 170,000), (2, 660,000), (3, 310,000), (4, 1,070,000)

Answer: C

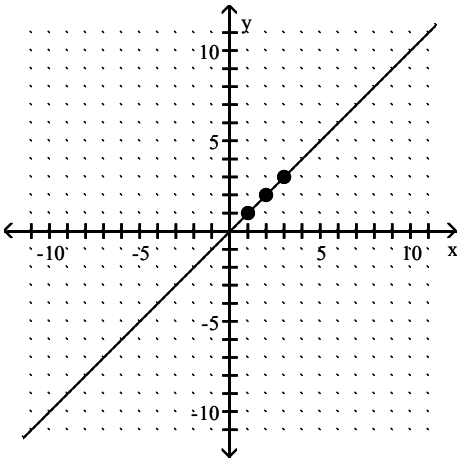
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Graph the equation by determining the missing values needed to plot the ordered pairs.

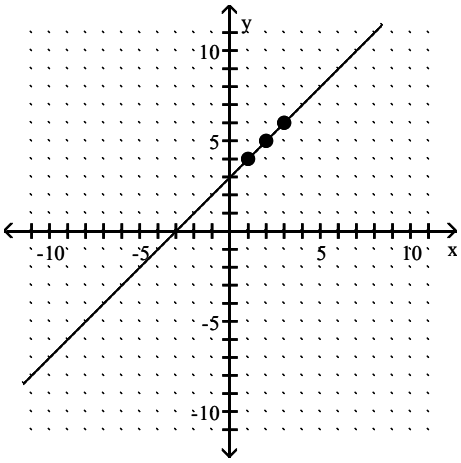
595) $y + x = 3$; (1,), (3,), (2,)



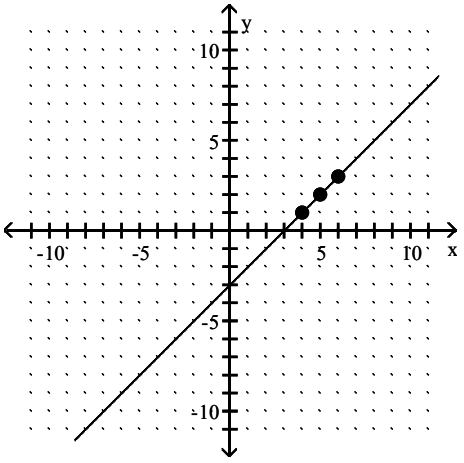
A)



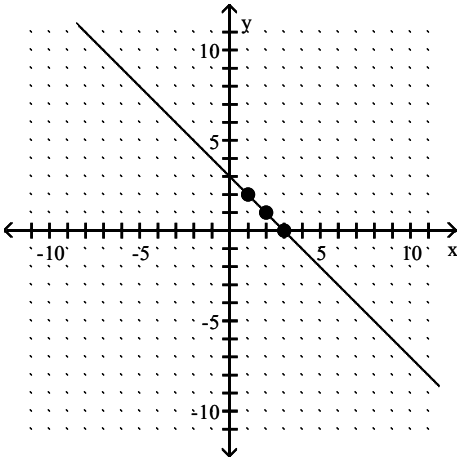
B)



C)



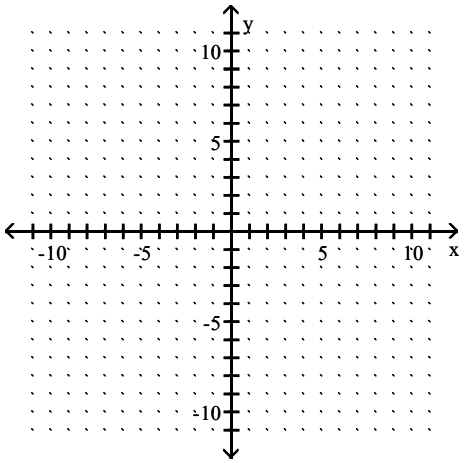
D)



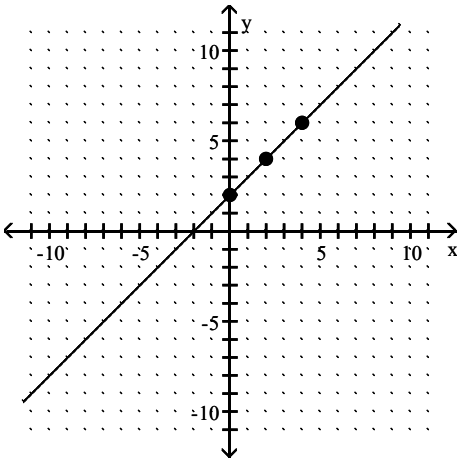
Answer: D

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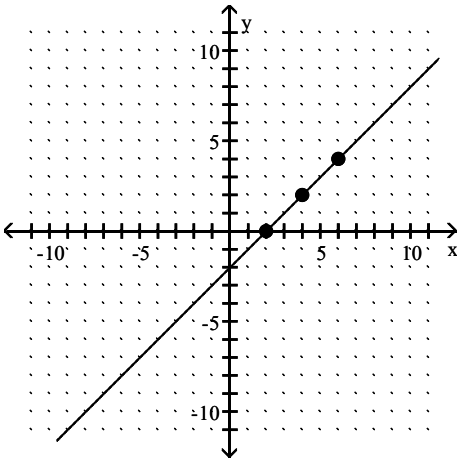
596) y – x = –2; (4,), (, 4), (2,)



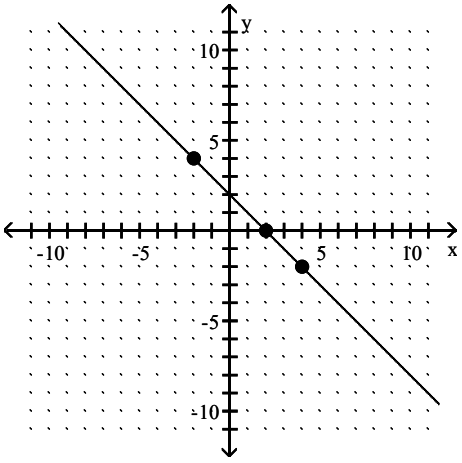
A)



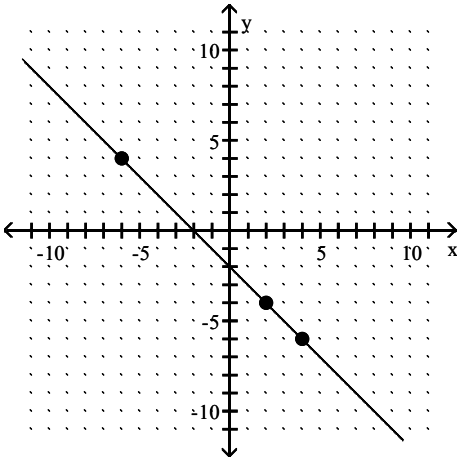
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C)



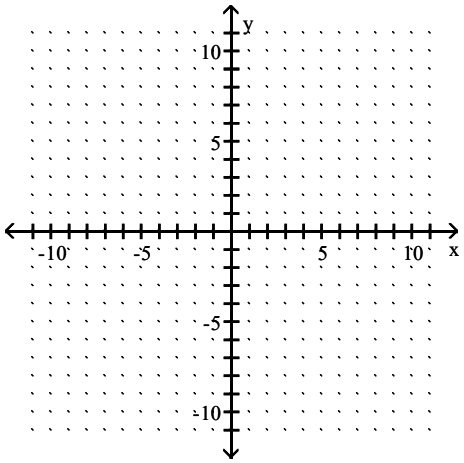
D)



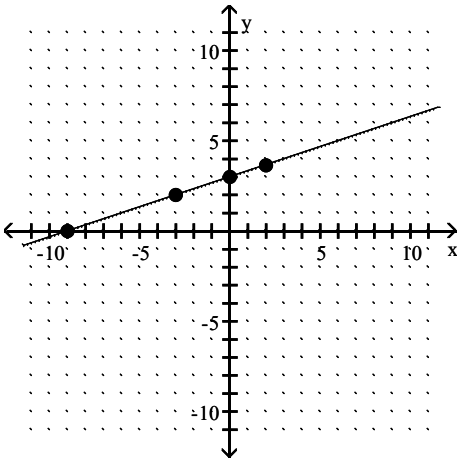
Answer: B

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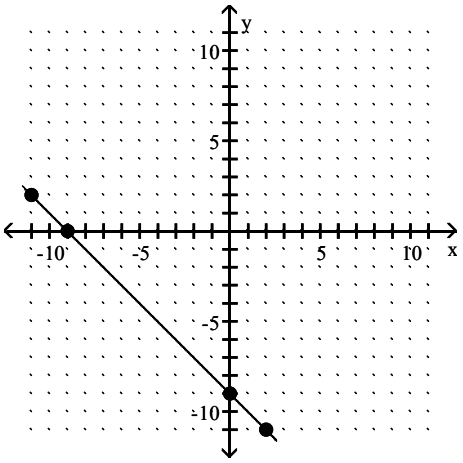
597) $x - 3y = -9$; (0,), (, 0), (2,), (, 2)



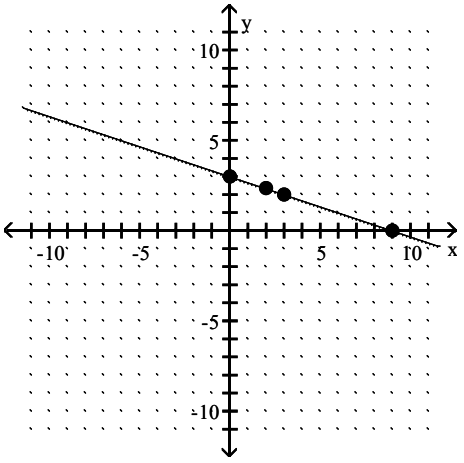
A)



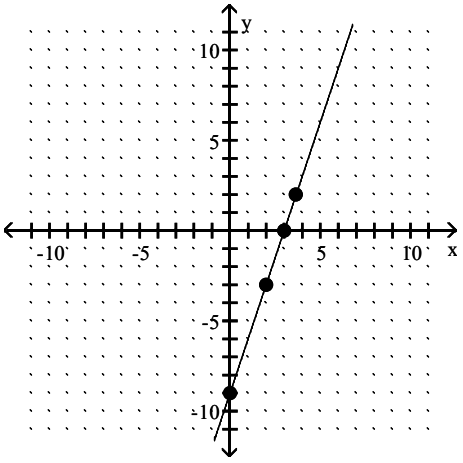
B)



C)



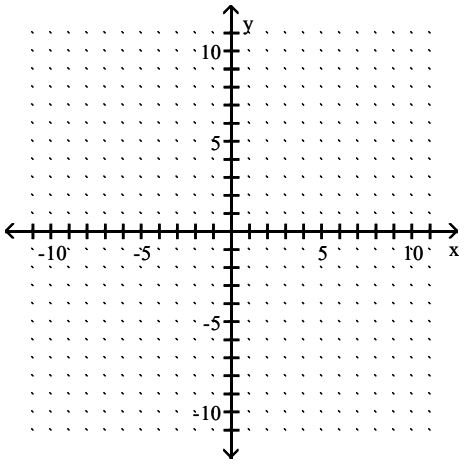
D)



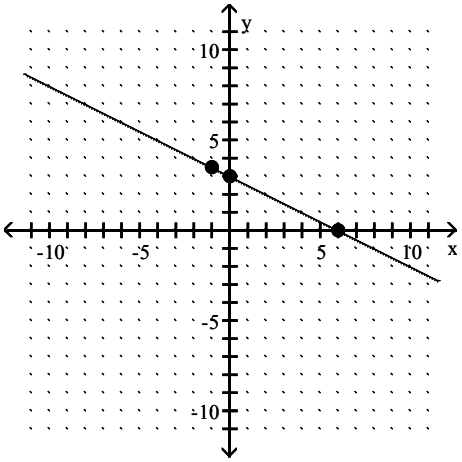
Answer: A

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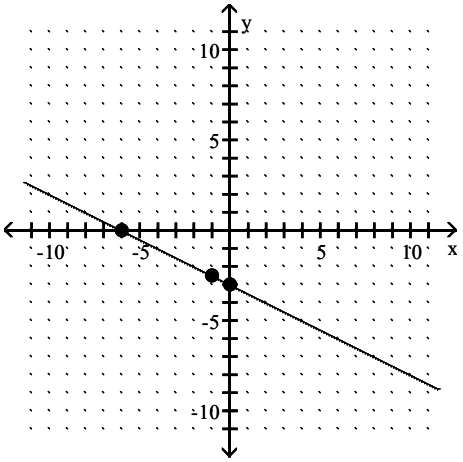
598) $3x - 6y = -18$; (0,), (, 0), (−1,)



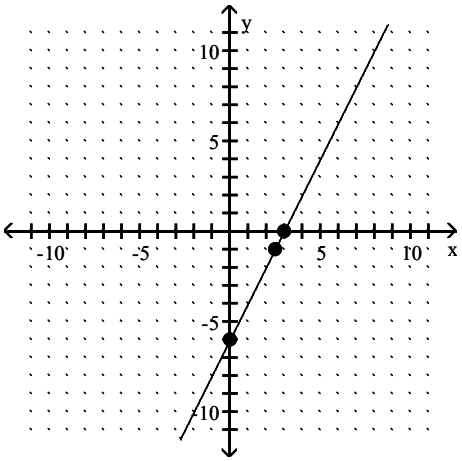
A)



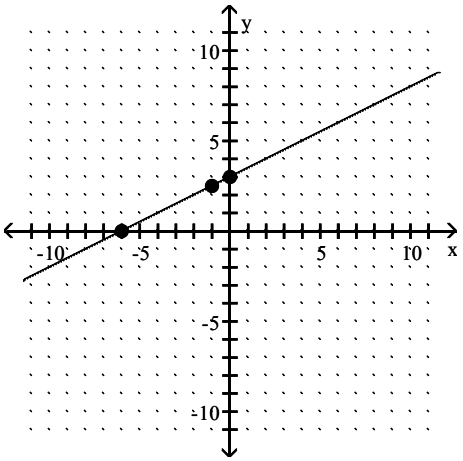
B)



C)



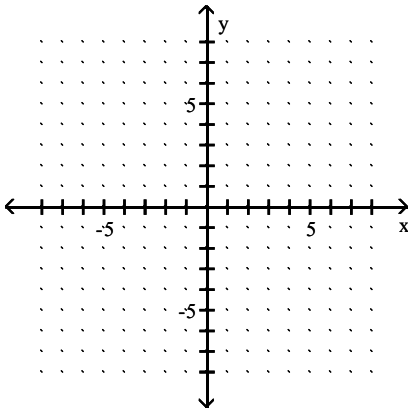
D)



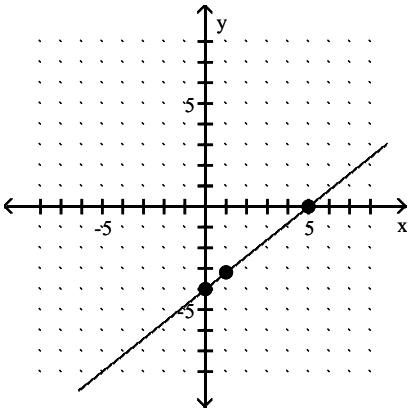
Answer: D

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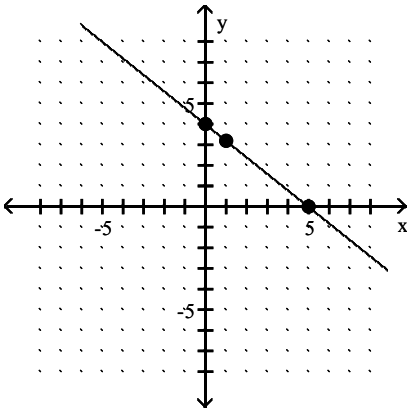
599) $5y = -4x + 20$; (0,), (, 0), (1,)



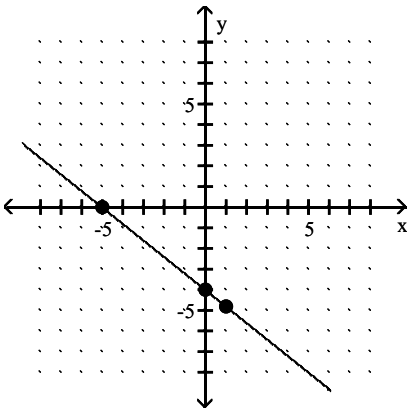
A)



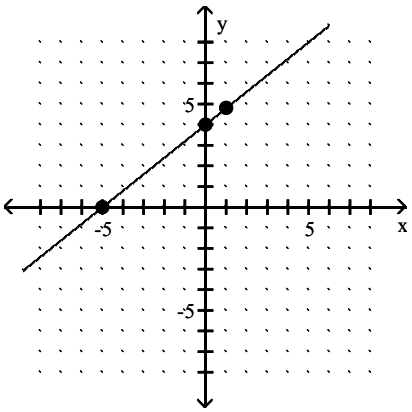
B)



C)



D)

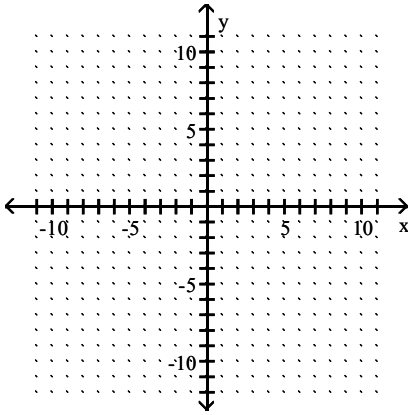


Answer: B

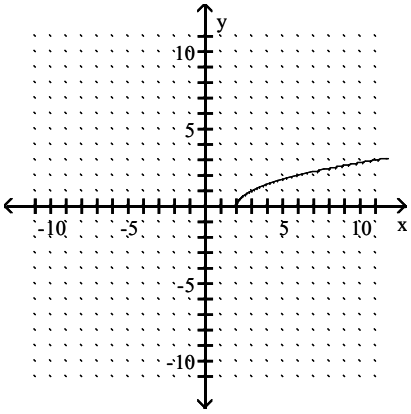
Graph the equation by plotting points.

Access Complete Test Bank for Trigonometry 12th Lial

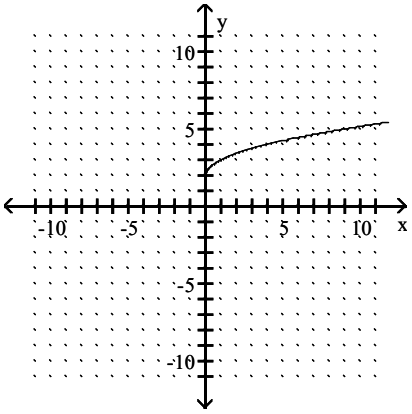
600) $y = \sqrt{x - 2}$



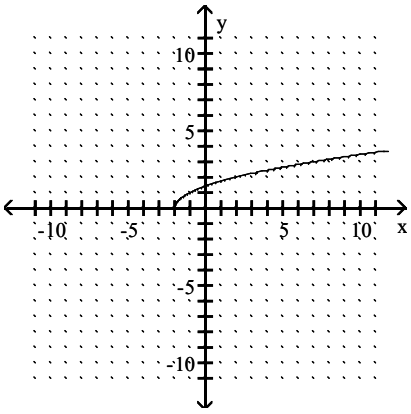
A)



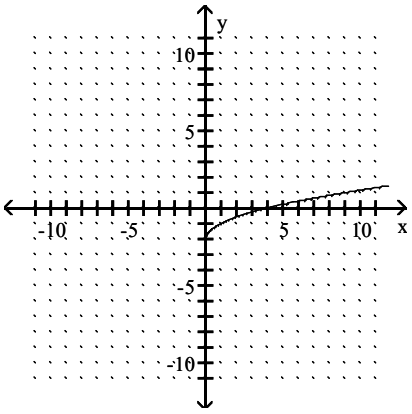
B)



C)



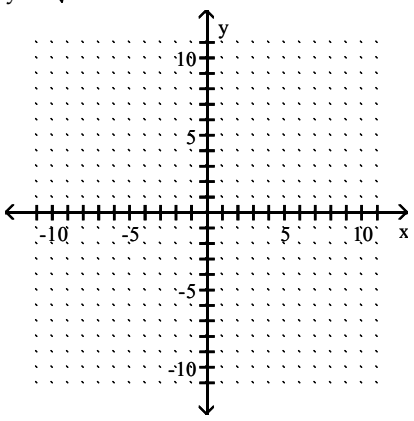
D)



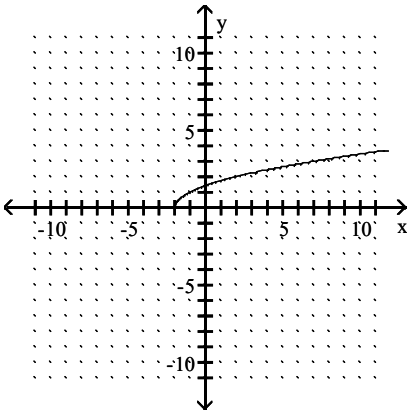
Answer: A

Access Complete Test Bank for Trigonometry 12th Lial

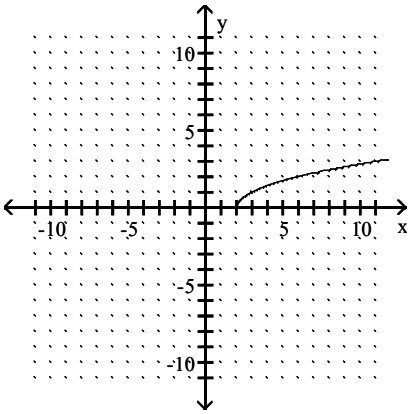
601) $y = \sqrt{x} + 2$



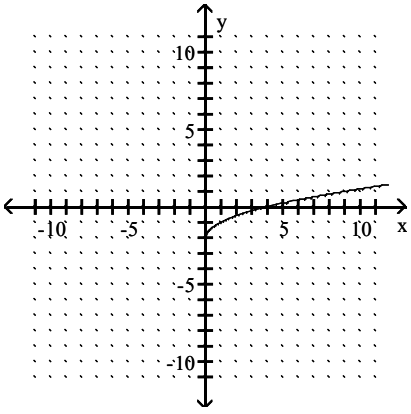
A)



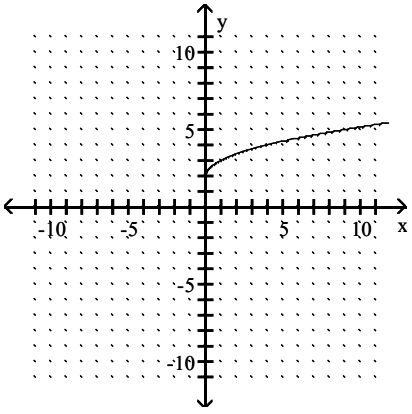
B)



C)



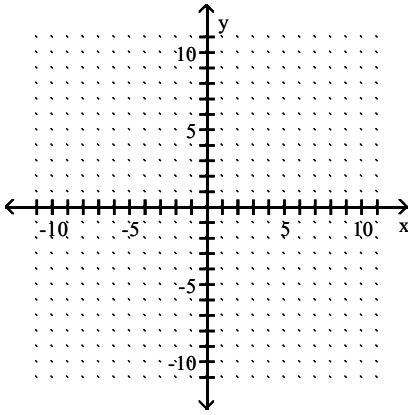
D)



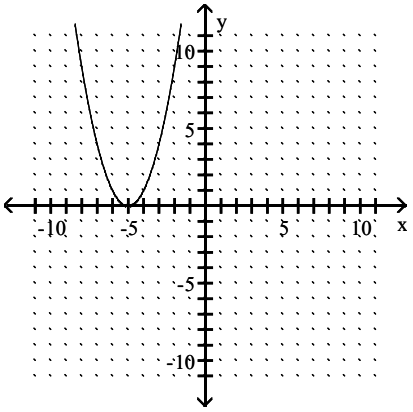
Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

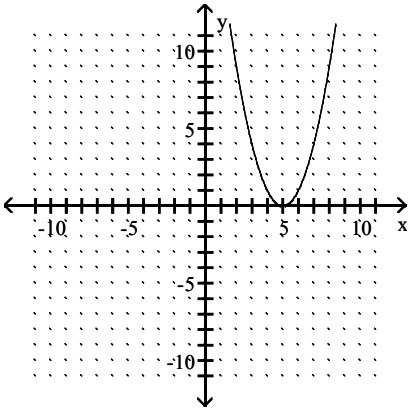
602) $y = x^2 + 5$



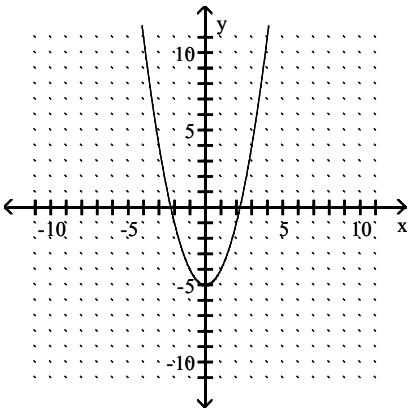
A)



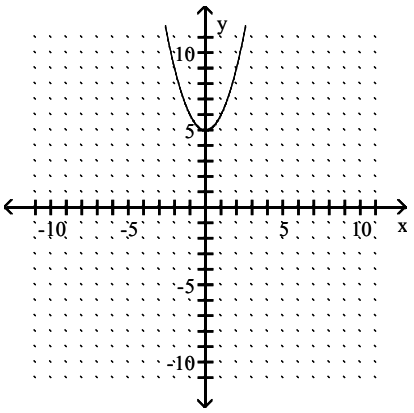
B)



C)



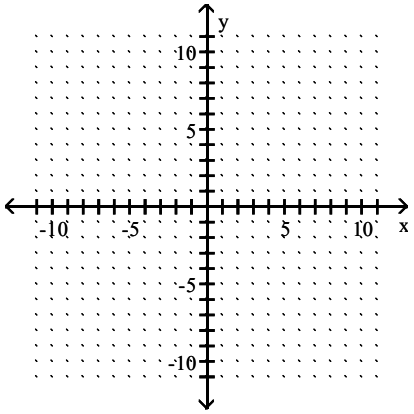
D)



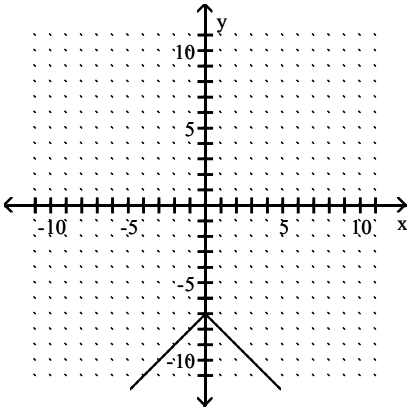
Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

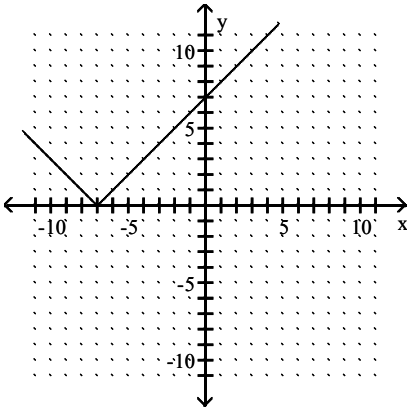
603) $y = |-7 - x|$



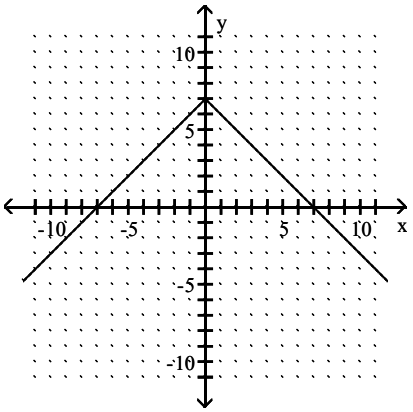
A)



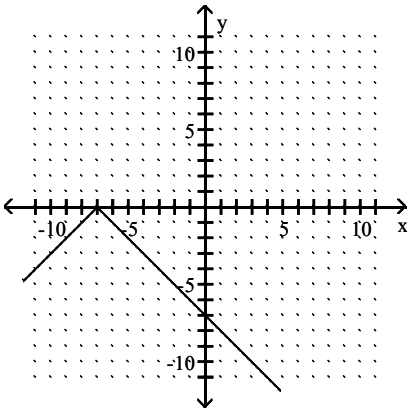
B)



C)



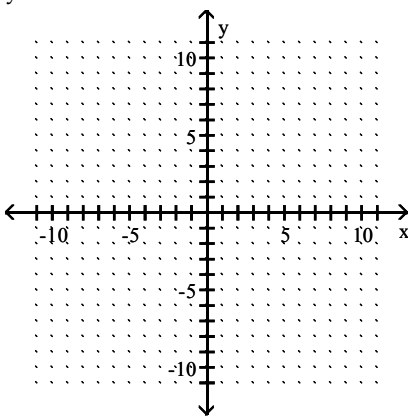
D)



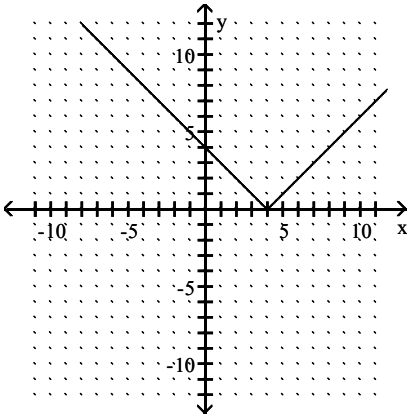
Answer: B

Access Complete Test Bank for Trigonometry 12th Lial

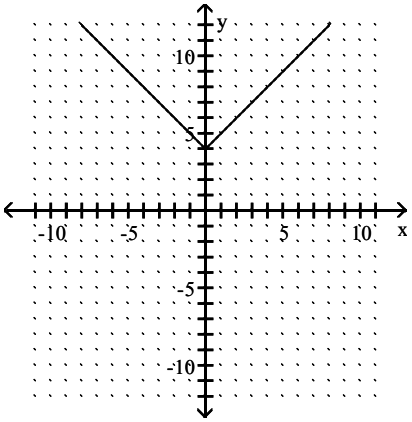
604) $y = |x| + 4$



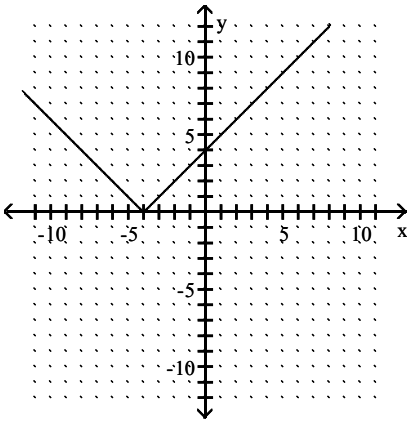
A)



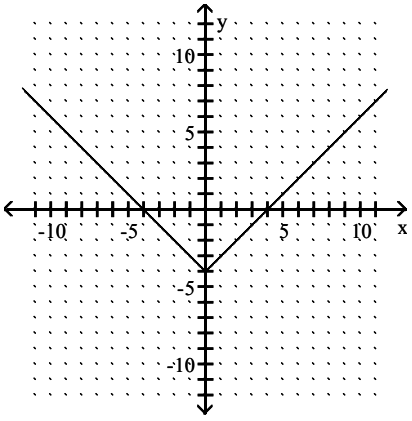
B)



C)



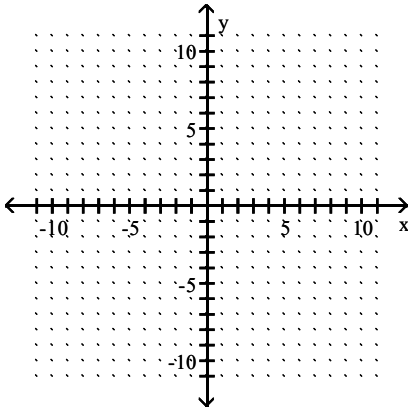
D)



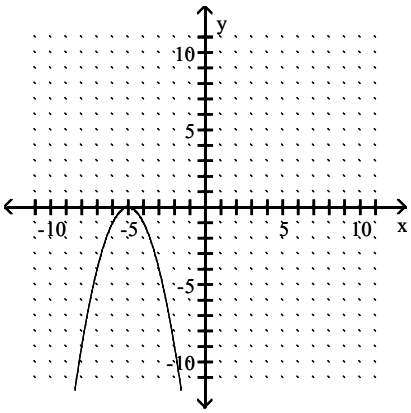
Answer: B

Access Complete Test Bank for Trigonometry 12th Lial

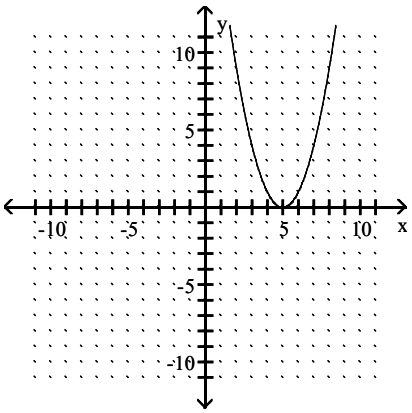
605) $y = -x^2 + 5$



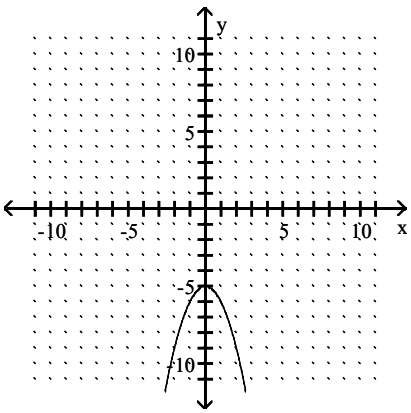
A)



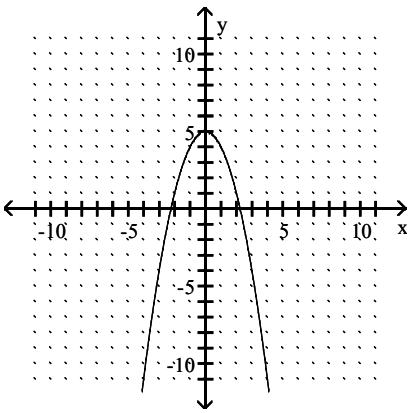
B)



C)



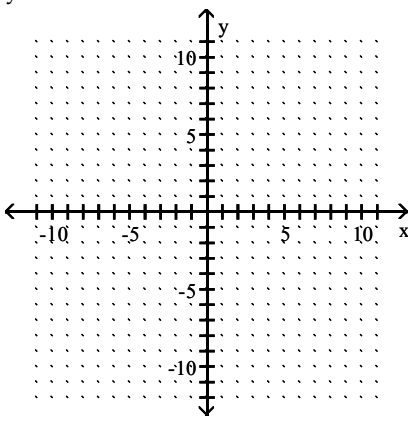
D)



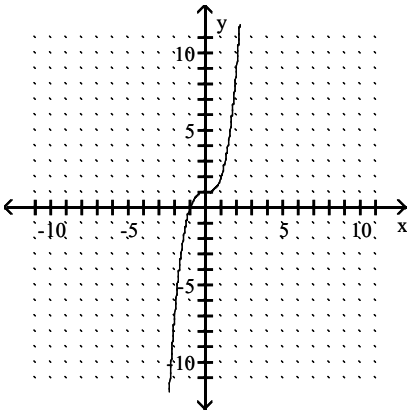
Answer: D

Access Complete Test Bank for Trigonometry 12th Lial

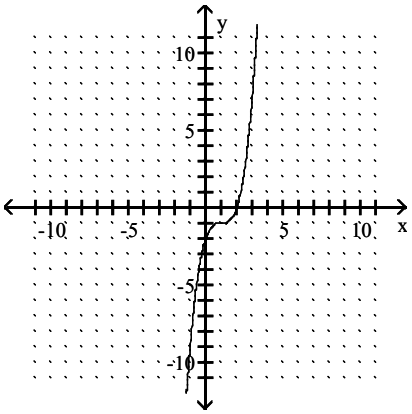
606) $y = x^3 + 1$



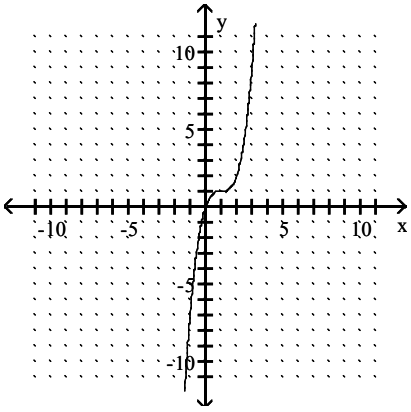
A)



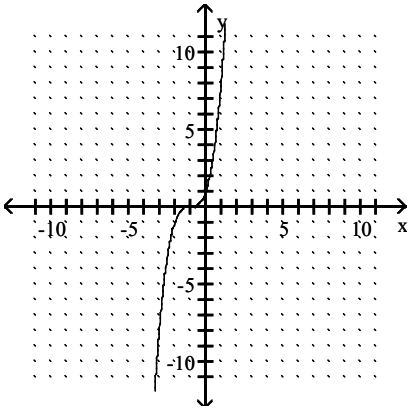
B)



C)



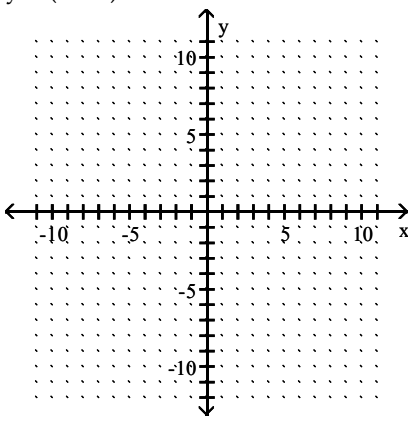
D)



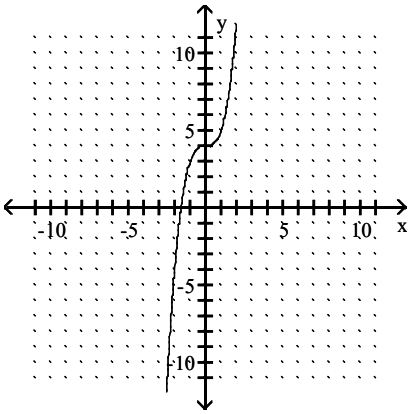
Answer: A

Access Complete Test Bank for Trigonometry 12th Lial

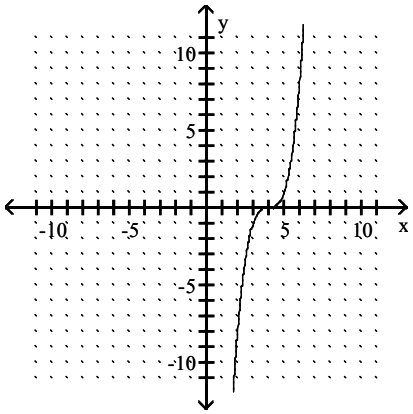
607) $y = (x + 4)^3$



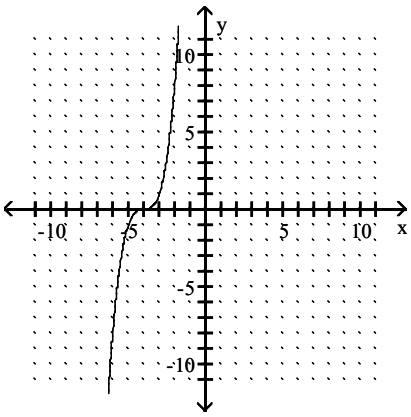
A)



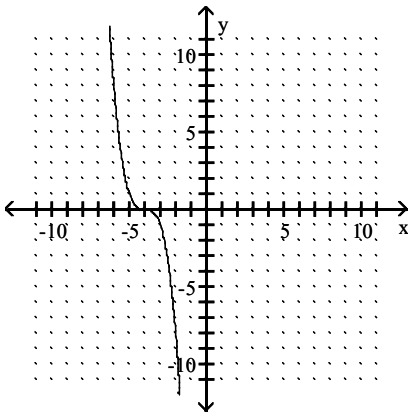
B)



C)



D)

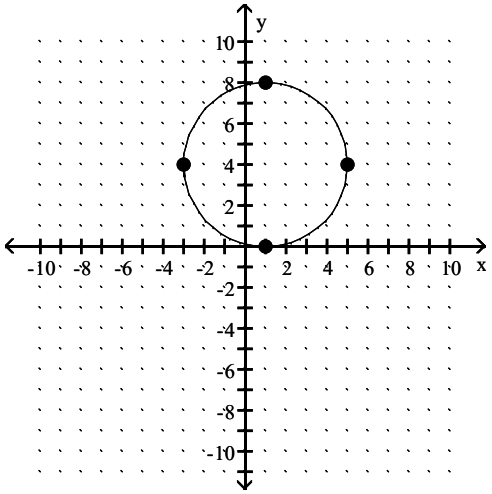


Answer: C

Access Complete Test Bank for Trigonometry 12th Lial

Use the graph to determine the equation of the circle in center–radius form.

608)



A) $(x + 1)^2 + (y + 4)^2 = 16$

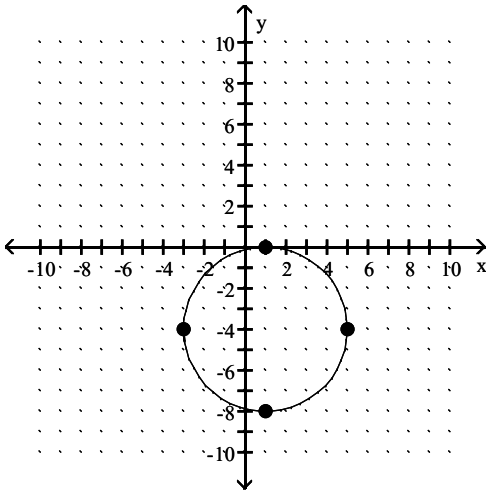
B) $(x - 1)^2 + (y - 4)^2 = 4$

C) $(x - 1)^2 + (y - 4)^2 = 16$

D) $(x + 1)^2 + (y + 4)^2 = 4$

Answer: C

609)



A) $(x - 1)^2 + (y + 4)^2 = 16$

B) $(x + 1)^2 + (y - 4)^2 = 16$

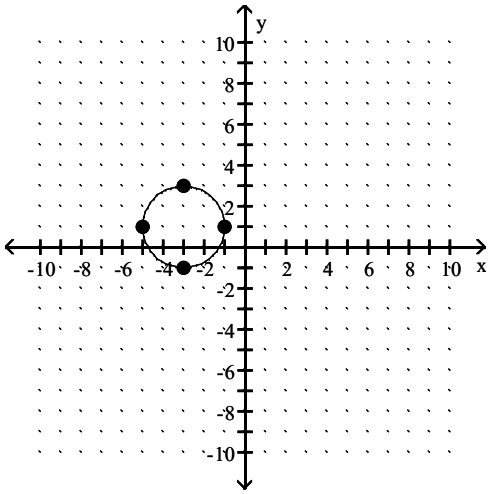
C) $(x + 1)^2 + (y - 4)^2 = 4$

D) $(x - 1)^2 + (y + 4)^2 = 4$

Answer: A

Access Complete Test Bank for Trigonometry 12th Lial

610)



A) $(x - 3)^2 + (y + 1)^2 = 2$

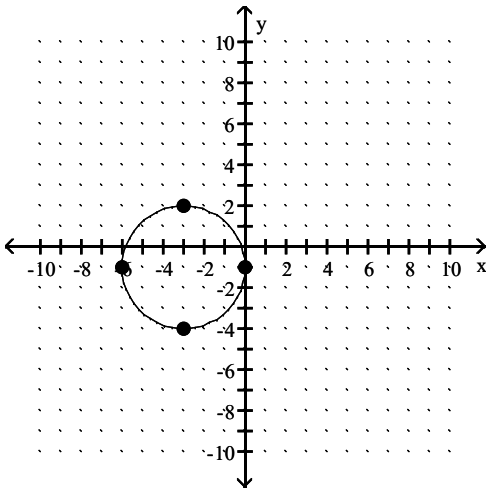
B) $(x + 3)^2 + (y - 1)^2 = 4$

C) $(x + 3)^2 + (y - 1)^2 = 2$

D) $(x - 3)^2 + (y + 1)^2 = 4$

Answer: B

611)



A) $(x + 3^2 + (y + 1)^2 = 3$

B) $(x + 3)^2 + (y + 1)^2 = 9$

C) $(x - 3)^2 + (y - 1)^2 = 3$

D) $(x - 3)^2 + (y - 1)^2 = 9$

Answer: B

Give the domain and range of the relation.

612) {(1, 8), (–2, –9), (–6, –5), (4, 0)}

A) domain: {1, 4, 8}; range: {–9, –6, –5, –2}

B) domain: {–9, –6, –5, –2}; range: {1, 4, 8}

C) domain: {–6, –2, 1, 4}; range: {–9, –5, 0, 8}

D) domain: {–9, –5, 0, 8}; range: {–6, –2, 1, 4}

Answer: C

613) {(3, 9), (–2, –9), (–7, –4), (6, –9)}

A) domain: {3, 6, 9}; range: {–9, –7, –4, –2}

B) domain: {–7, –2, 3, 6}; range: {–9, –4, 9}

C) domain: {–9, –7, –4, –2}; range: {3, 6, 9}

D) domain: {–9, –4, 9}; range: {–7, –2, 3, 6}

Answer: B

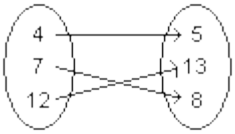
Access Complete Test Bank for Trigonometry 12th Lial

614) {(2, 2), (−2, −2), (−6, −6), (4, 4)}

A) domain: {2, 4}; range: {−6, −2}
B) domain: {−6, −2, 2, 4}; range: {−6, −2, 2, 4}
C) domain: {−6, −2}; range: {2, 4}
D) None of these

Answer: B

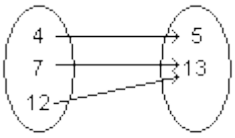
615)



A) domain: {4, 5, 7}; range: {8, 12, 13}
B) domain: {5, 8, 13}; range: {4, 7, 12}
C) None of these
D) domain: {4, 7, 12}; range: {5, 8, 13}

Answer: D

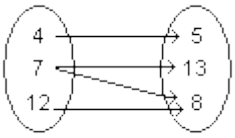
616)



A) domain: {4, 5, 7}; range: {12, 13}
B) domain: {4, 7, 12}; range: {5, 13}
C) None of these
D) domain: {5, 13}; range: {4, 7, 12}

Answer: B

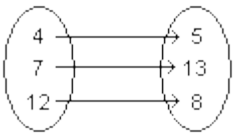
617)



A) domain: {5, 8, 13}; range: {4, 7, 12}
B) None of these
C) domain: {4, 12}; range: {5, 13}
D) domain: {4, 7, 12}; range: {5, 8, 13}

Answer: D

618)

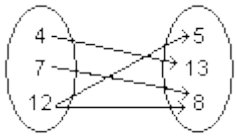


A) domain: {5, 8, 13}; range: {4, 7, 12}
B) domain: {4, 7, 12}; range: {5, 8, 13}
C) None of these
D) domain: {4, 8, 12}; range: {5, 7, 13}

Answer: B

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619)



A) domain: {4, 8, 12}; range: {5, 7, 13}
B) None of these
C) domain: {5, 8, 13}; range: {4, 7, 12}
D) domain: {4, 7, 12}; range: {5, 8, 13}

Answer: C

620) Annual New Telemarketing Companies

Year	Number
1995	56
1996	112
1997	187
1998	178
1999	318

A) domain: {56, 112, 178, 187, 318}; range: {1995, 1996, 1997, 1998, 1999}
B) None of these
C) domain: {1995, 1996, 1997, 1998, 1999}; range: {56, 112, 178, 187, 318}
D) domain: {Year}; range: {Number}

Answer: C

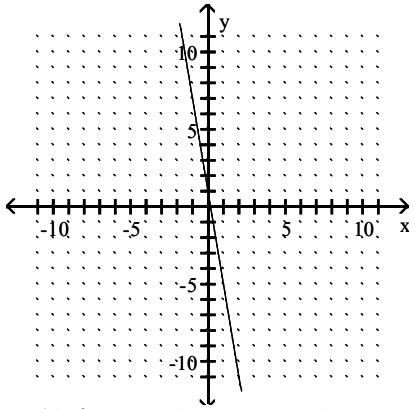
621) Annual New Telemarketing Companies

Year	Number
1993	52
1994	102
1995	187
1996	170
1997	218

A) domain: {Year}; range: {Number}
B) domain: {1993, 1994, 1995, 1996, 1997}; range: {52, 102, 170, 187, 218}
C) domain: {52, 102, 170, 187, 218}; range: {1993, 1994, 1995, 1996, 1997}
D) None of these

Answer: B

622)

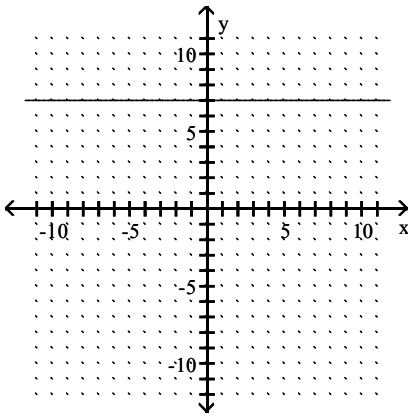


A) domain: (−∞, 0] ∪ [0, ∞); range: (−∞, 1] ∪ [1, ∞)
B) domain: (−∞, 0) ∪ (0, ∞); range: (−∞, 1) ∪ (1, ∞)
C) domain: (−∞, ∞); range: (−∞, ∞)
D) domain: (−∞, 1) ∪ (1, ∞); range: (−∞, 0) ∪ (0, ∞)

Answer: C

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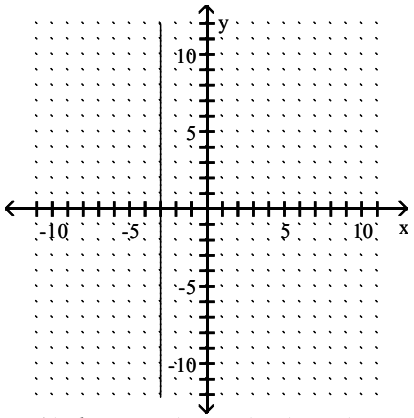
623)



A) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$
B) domain: $\{7\}$; range: $(-\infty, \infty)$
C) domain: $(-\infty, \infty)$; range: $\{7\}$
D) domain: $(-\infty, \infty)$; range: $(-\infty, 7) \cup (7, \infty)$

Answer: C

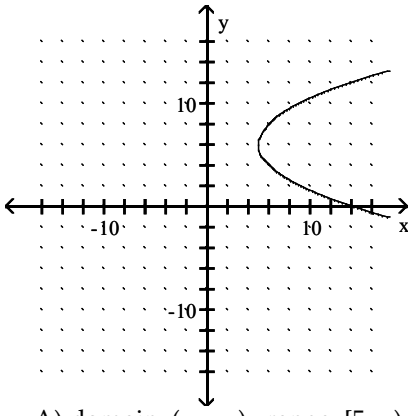
624)



A) domain: $(-\infty, -3) \cup (-3, \infty)$; range: $(-\infty, \infty)$
B) domain: $(-\infty, \infty)$; range: $\{-3\}$
C) domain: $\{-3\}$; range: $(-\infty, \infty)$
D) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$

Answer: C

625)

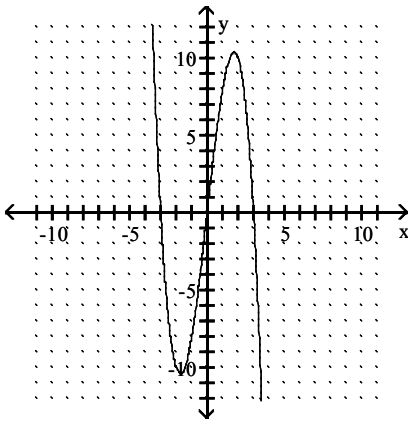


A) domain: $(-\infty, \infty)$; range: $[5, \infty)$
B) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$
C) domain: $(5, \infty)$; range: $(6, \infty)$
D) domain: $[5, \infty)$; range: $(-\infty, \infty)$

Answer: D

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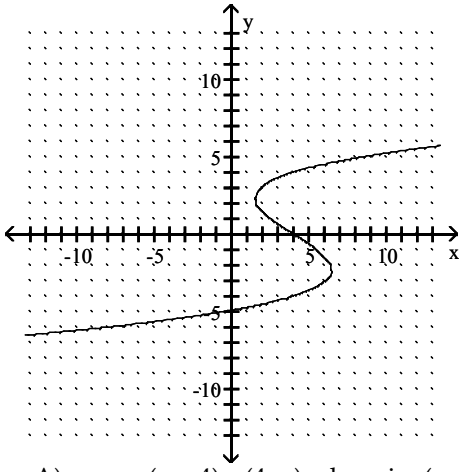
626)



A) range: (–3, 0) ∪ (0, 3); domain: (–10, 0) ∪ (0, 10)
B) range: (–3, 3); domain: (–10, 10)
C) range: (–∞, –3) ∪ (–3, 0) ∪ (0, 3) ∪ (3, ∞); domain: (–∞, –10) ∪ (–10, 0) ∪ (0, 10) ∪ (10, ∞)
D) range: (–∞, ∞); domain: (–∞, ∞)

Answer: D

627)

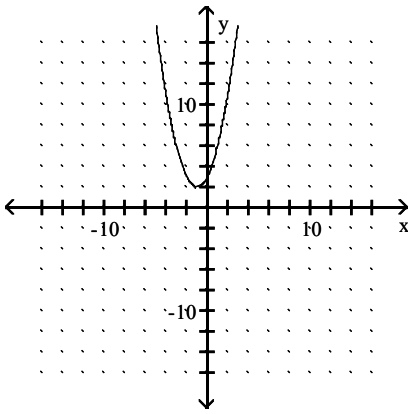


A) range: (–∞, 4) ∪ (4, ∞); domain: (–∞, –5) ∪ (–5, ∞)
B) range: (–∞, ∞); domain: (–∞, ∞)
C) range: (–∞, 0) ∪ (0, 4) ∪ (4, ∞); domain: (–∞, –5) ∪ (–5, 0) ∪ (0, ∞)
D) None of these

Answer: B

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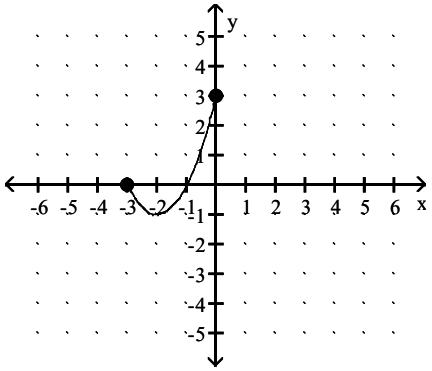
628)



A) domain: (0, ∞); range: [–1, ∞)
B) domain: (–∞, 0); range: (–∞, 0)
C) domain: (–∞, 0) ∪ (0, ∞); range: (–∞, 0) ∪ (0, ∞)
D) domain: (–∞, ∞); range: [2, ∞)

Answer: D

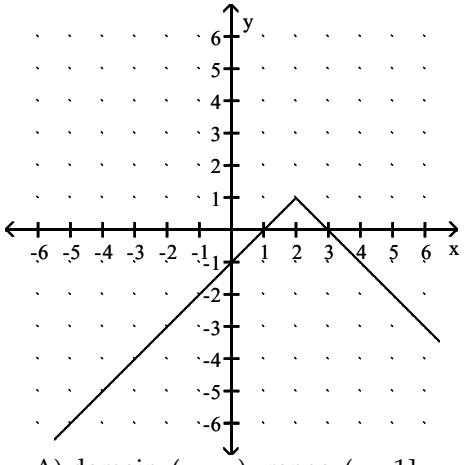
629)



A) domain: (–∞, 3]; range: [0, 3]
B) domain: [–3, 0]; range: [–1, 3]
C) domain: [–1, 3]; range: [–3, 0]
D) domain: [0, 3]; range: (–∞, 3]

Answer: B

630)

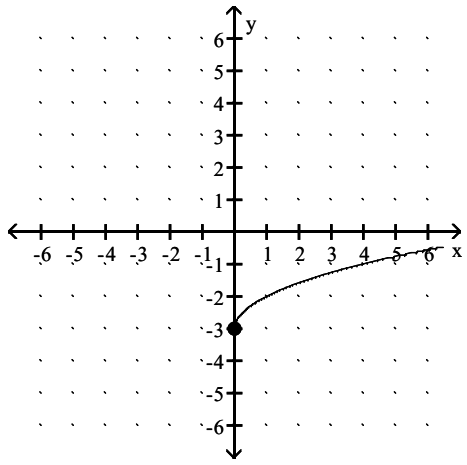


A) domain: (–∞, ∞); range: (–∞, 1]
B) domain: (–∞, ∞); range: (–∞, ∞)
C) domain: (–∞, 2) or (2, ∞); range: (–∞, 1) or (1, ∞)
D) domain: (–∞, 2]; range: (–∞, 1]

Answer: A

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631)



A) domain: [0, ∞); range: [0, ∞)
B) domain: (−∞, ∞); range: [−3, ∞)
C) domain: [0, ∞); range: [−3, ∞)
D) domain: [0, ∞); range: (−∞, ∞)

Answer: C

632) $y = x^2 + 8$

A) domain: (−8, ∞); range: (−∞, ∞)
B) domain: (−∞,∞); range: (−8, ∞)
C) domain: (8, ∞); range: (−∞, ∞)
D) domain: (−∞, ∞); range: [8, ∞)

Answer: D

633) $y = (x + 4)^2 - 4$

A) domain: (−∞, ∞); range: [−4, ∞)
B) domain: (4, ∞); range: (−∞, ∞)
C) domain: (−∞, −4); range: (−∞, ∞)
D) domain: (−∞, ∞); range: (−∞, −4)

Answer: A

634) $y = 2x + 10$

A) domain: (−∞, ∞); range: [0, ∞)
B) domain: (−∞, ∞); range: [10, ∞)
C) domain: (−∞, ∞); range: (−∞, ∞)
D) domain: [0, ∞); range: (−∞, ∞)

Answer: C

635) $y = 5x^6$

A) domain: [0, ∞); range: [−5, ∞)
B) domain: (−∞, ∞); range: (-∞, ∞)
C) domain: (−∞, ∞); range: [5, ∞)
D) domain: (−∞, ∞); range: [0, ∞)

Answer: D

636) $x = y^6$

A) domain: (-∞, ∞); range: [0, ∞)
B) domain: (-∞, ∞); range: (−∞, ∞)
C) domain: [0, ∞); range: [0, ∞)
D) domain: [0, ∞); range: (−∞, ∞)

Answer: D

637) $xy = 8$

A) domain: (−∞, 0) ∪ (0, ∞); range: [0, ∞)
B) domain: [0, ∞); range: (−∞, ∞)
C) domain: (−∞, 0) ∪ (0, ∞); range: (−∞, 0) ∪ (0, ∞)
D) domain: (−∞, ∞); range: (−∞, ∞)

Answer: C

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638) $y = \sqrt{5 + x}$

A) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$
B) domain: $(-\infty, \infty)$; range: $[-5, \infty)$
C) domain: $[0, \infty)$; range: $(-\infty, \infty)$
D) domain: $[-5, \infty)$; range: $[0, \infty)$

Answer: D

639) $y = \sqrt{2x - 3}$

A) domain: $\left[\frac{3}{2}, \infty\right)$; range: $[0, \infty)$
B) domain: $(-\infty, \infty)$; range: $\left[\frac{3}{2}, \infty\right)$
C) domain: $\left[\frac{3}{2}, \infty\right)$; range: $(-\infty, \infty)$
D) domain: $\left(\frac{3}{2}, \infty\right)$; range: $[0, \infty)$

Answer: A

640) $y = \frac{13}{12 - x}$

A) domain: $(-\infty, 12) \cup (12, \infty)$; range: $(-\infty, \infty)$
B) domain: $(-\infty, \infty)$; range: $(-\infty, 0) \cup (0, \infty)$
C) domain: $(-\infty, \infty)$; range: $(-\infty, \infty)$
D) domain: $(-\infty, 12) \cup (12, \infty)$; range: $(-\infty, 0) \cup (0, \infty)$

Answer: D

641) $y = \frac{-8}{x - 5}$

A) domain: $(-\infty, 5) \cup (5, \infty)$; range: $(-\infty, 0) \cup (0, \infty)$
B) domain: $(-\infty, -5) \cup (5, \infty)$; range: $(-\infty, \infty)$
C) domain: $(-\infty, 5) \cup (5, \infty)$; range: $(-\infty, \infty)$
D) domain: $(-\infty, -5) \cup (-5, \infty)$; range: $(-\infty, 0) \cup (0, \infty)$

Answer: A

Evaluate the function.

642) Find f(−3) when $f(x) = -3x + 4$

A) 13
B) 5
C) −3
D) 1

Answer: A

643) Find f(−2) when $f(x) = x^2 + 4x + 7$

A) 5
B) −11
C) 19
D) 3

Answer: D

644) Find f(0) when $f(x) = x^2 + 4x + 4$

A) 16
B) 4
C) 0
D) −4

Answer: B

645) Find f(1) when $f(x) = 2x^2 + 2x - 7$

A) −3
B) 11
C) −4
D) −7

Answer: A

646) Find $f\left(\frac{1}{3}\right)$ when $f(x) = -3x^2 - 9x + 9$

A) $\frac{1}{3}$
B) $-\frac{1}{3}$
C) $-\frac{17}{3}$
D) $\frac{17}{3}$

Answer: D

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647) Find g(a + 1) when $g(x) = \frac{1}{3}x - 2$.

A) $\frac{1}{3}a - 2$ B) $\frac{a + 5}{3}$ C) $\frac{a - 5}{3}$ D) $\frac{1}{3}a - 3$

Answer: C

648) Find g(a + 1) when g(x) = 3x + 2.

A) 3a – 1 B) $\frac{1}{3}a + 2$ C) 3a + 2 D) 3a + 5

Answer: D

649) Find f(k) when $f(x) = 3x^2 + 4x + 5$

A) $9k^2 + 16k + 25$ B) $3k^2 + 16k + 5$ C) $3k^2 + 4k + 5$ D) $3k^2 + 4k + 25$

Answer: C

650) Find f(–x) when $f(x) = 3x^2 - 2x + 4$

A) $3x^2 + 2x + 4$ B) $3x^2 + 2x - 4$ C) $-3x^2 + 2x - 4$ D) $-3x^2 + 2x + 4$

Answer: A

651) Find f(k – 1) when $f(x) = 5x^2 + 5x + 7$

A) $5k^2 + 40k + 17$ B) $-5k^2 + 5k + 7$ C) $5k^2 - 5k + 17$ D) $5k^2 - 5k + 7$

Answer: D

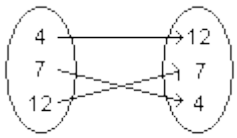
652) Find f(5) if f = {(–2, 3), (3, 0), (0, 5), (5, –2)}

A) (–2, 0) B) –2 C) None of these D) 0

Answer: B

653) Find f(7)

f



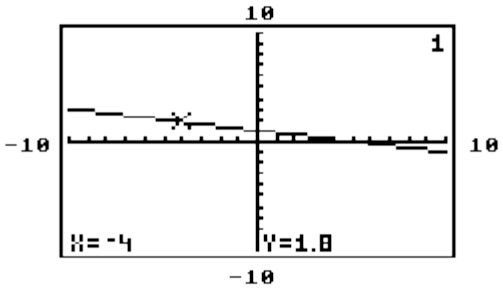
A) (4, 12) B) None of these C) 4 D) 12

Answer: C

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The graph of y = f(x) is given. Use the graph to find the function value.

654)

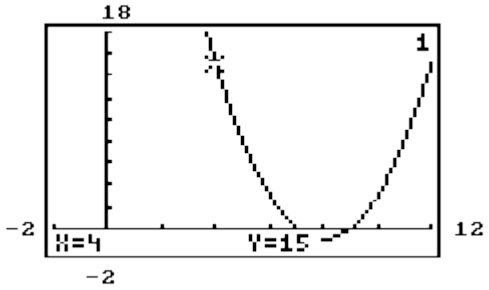


Find f(–4).

A) None of these B) –4 C) 1 D) 1.8

Answer: D

655)

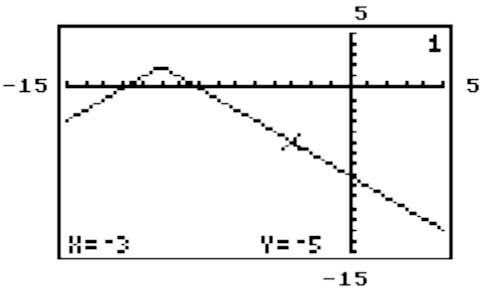


Find f(4).

A) –1 B) None of these C) 4 D) 15

Answer: D

656)



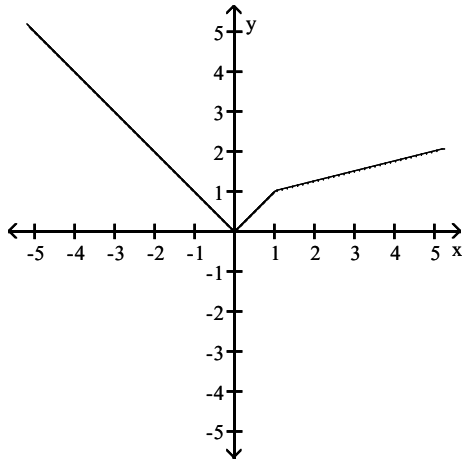
Find f(–3).

A) None of these B) 2 C) –3 D) –5

Answer: D

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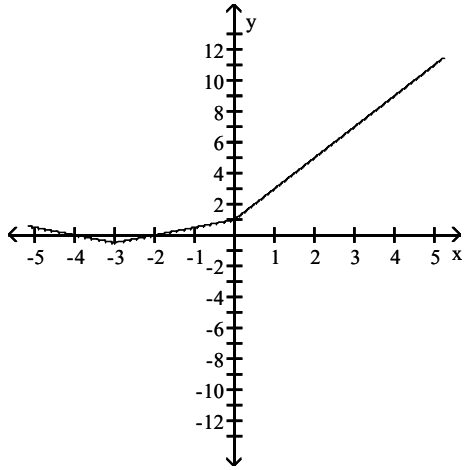
657) Find f(–5).



A) 5 B) 2 C) 17 D) –5

Answer: A

658) Find f(4).

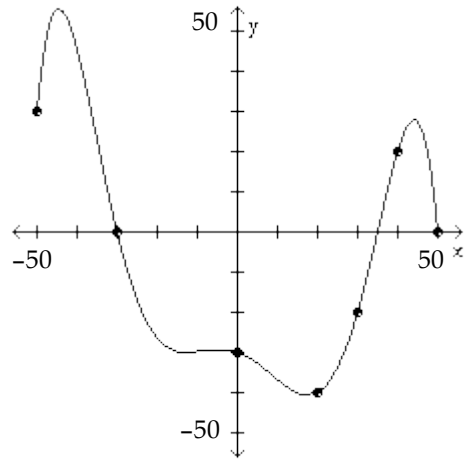


A) –9 B) 7 C) 9 D) 1.5

Answer: C

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659) Find f(20).

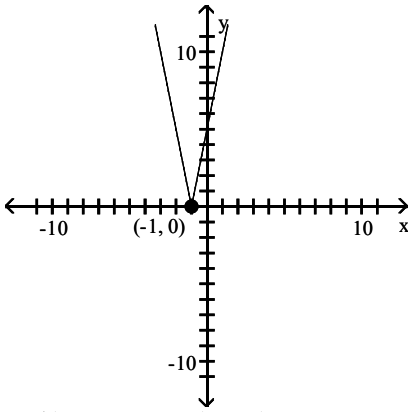


A) –40 B) 30 C) 20 D) 0

Answer: A

Determine the largest open intervals of the domain over which the function is increasing, decreasing, and constant.

660)

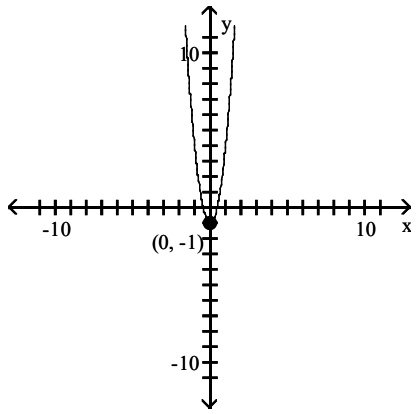


A) Increasing (–1, ∞); Decreasing (–∞, –1)
B) Increasing (1, ∞); Decreasing (–∞, 1)
C) Increasing (–∞, –1); Decreasing (–1, ∞)
D) Increasing (–∞, 1); Decreasing (1, ∞)

Answer: A

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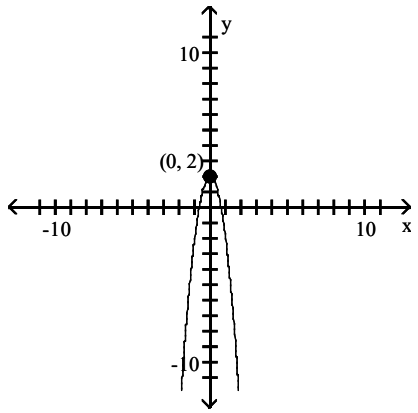
661)



A) Increasing (0, ∞); Decreasing (−∞, 0)
B) Increasing (−∞, 0); Decreasing (−∞, 0)
C) Increasing (−∞, 0); Decreasing (0, −∞)
D) Increasing (−∞, 0); Decreasing (0, ∞)

Answer: A

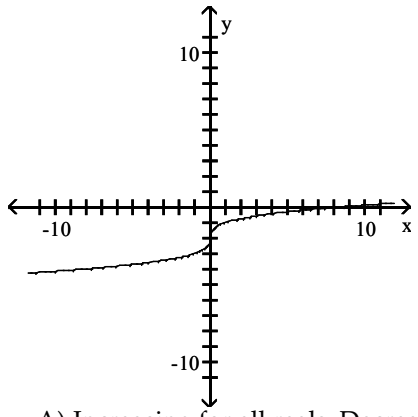
662)



A) Increasing (−∞, 0); Decreasing (−∞, 0)
B) Increasing (−∞, 0); Decreasing (0, −∞)
C) Increasing (−∞, 0); Decreasing (0, ∞)
D) Increasing (0, ∞); Decreasing (−∞, 0)

Answer: C

663)

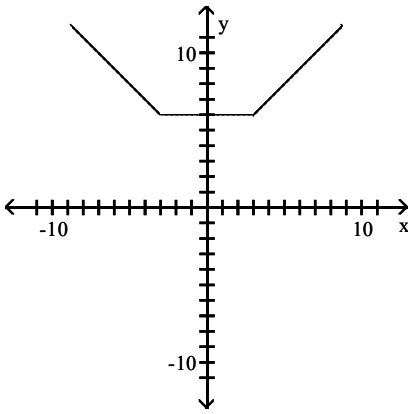


A) Increasing for all reals; Decreasing never
B) Increasing never; Decreasing for all reals
C) Increasing (−∞, 0); Decreasing (0, ∞)
D) Increasing (0, ∞); Decreasing (−∞, 0)

Answer: A

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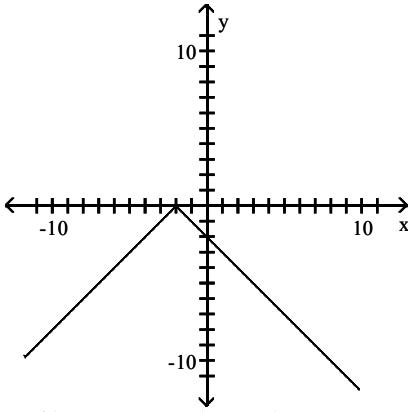
664)



A) Increasing (−∞, 3); Decreasing(−∞, −3); Constant (−3, 3)
B) Increasing (3, ∞); Decreasing (−3, ∞); Constant (−3, 3)
C) Increasing (3, ∞); Decreasing (−∞, −3); Constant (−3, 3)
D) Increasing (−∞, 3); Decreasing (−3, ∞); Constant (−3, 3)

Answer: C

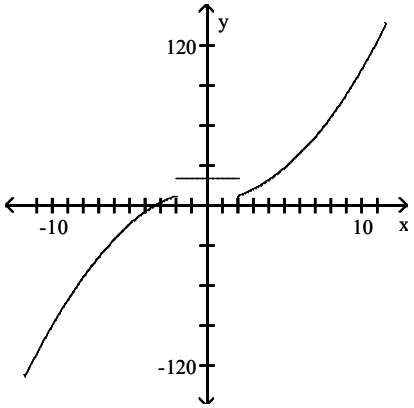
665)



A) Increasing (−∞, −2); Decreasing (−∞, −2)
B) Increasing (−∞, −2); Decreasing (−2, ∞)
C) Increasing (−2, ∞); Decreasing (−∞, −2)
D) Increasing (−2, ∞); Decreasing (−2 ∞)

Answer: B

666)



A) Increasing (−∞, −2) ∪ (2, ∞); Decreasing never
B) Increasing never; Decreasing (−∞, −2) ∪ (2, ∞)
C) Increasing (2, ∞); Decreasing (−∞, −2)
D) Increasing (−2, 2); Decreasing (−∞, −2) ∪ (2, ∞)

Answer: A

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Decide whether the relation defines a function.

667) $5x = 5 - 6y$

A) Function B) Not a function

Answer: A

668) $y = 7x - 5$

A) Function B) Not a function

Answer: A

669) $y = x^3$

A) Function B) Not a function

Answer: A

670) $y^2 = 3x$

A) Function B) Not a function

Answer: B

671) $y = \sqrt{6x - 3}$

A) Function B) Not a function

Answer: A

672) $4x + 2y < -10$

A) Not a function B) Function

Answer: A

673) $x = y^6$

A) Not a function B) Function

Answer: A

674) $y = x^2$

A) Function B) Not a function

Answer: A

675) $xy = -9$

A) Function B) Not a function

Answer: A

676) $y = \dfrac{10}{x - 1}$

A) Not a function B) Function

Answer: B

677) {(1, –7), (3, 6), (6, 9), (7, –9), (10, –3)}

A) Not a function B) Function

Answer: B

678) {(–4, 1), (–3, –6), (3, –7), (3, 2)}

A) Not a function B) Function

Answer: A

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679) {(–8, 2), (–8, 8), (2, 1), (6, –2), (9, 4)}

A) Not a function B) Function

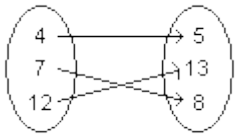
Answer: A

680) {(–6, 4), (–2, –7), (2, 8), (7, 5)}

A) Function B) Not a function

Answer: A

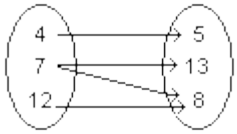
681)



A) Not a function B) Function

Answer: B

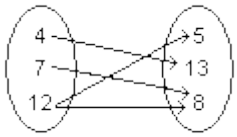
682)



A) Function B) Not a function

Answer: B

683)



A) Not a function B) Function

Answer: A

684) Student Test Score

Name	Test Score
Bob L.	90
Susan H.	83
Jim H.	76
Bruce B.	96

A) Function B) Not a function

Answer: A

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685) Student Test Score

Name	Test Score
Bob L.	90
Susan H.	83
Jim H.	90
Bruce B.	96

A) Not a function B) Function

Answer: B

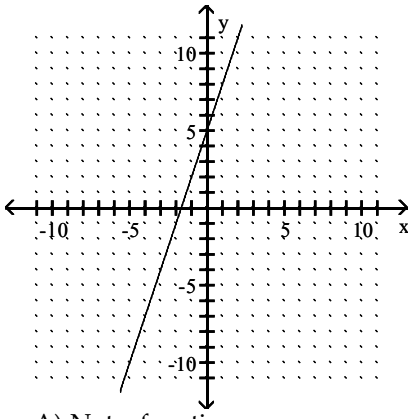
686) Annual New Telemarketing Companies

Year	Number
1995	25
1996	50
1997	125
1998	85
1999	225

A) Not a function B) Function

Answer: B

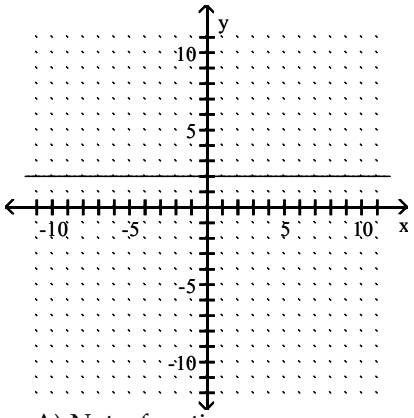
687)



A) Not a function B) Function

Answer: B

688)

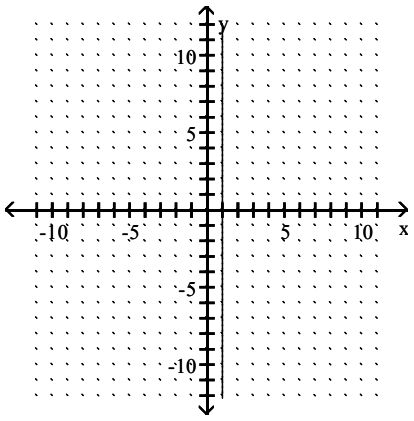


A) Not a function B) Function

Answer: B

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689)

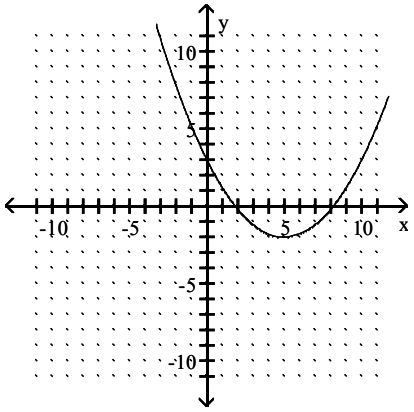


A) Function

B) Not a function

Answer: B

690)

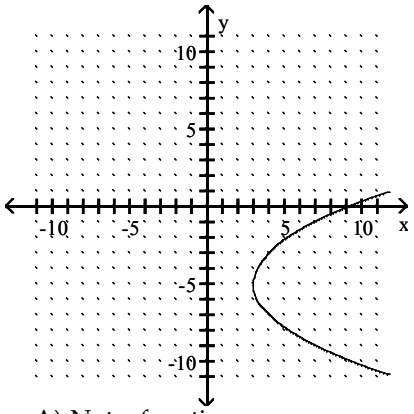


A) Function

B) Not a function

Answer: A

691)



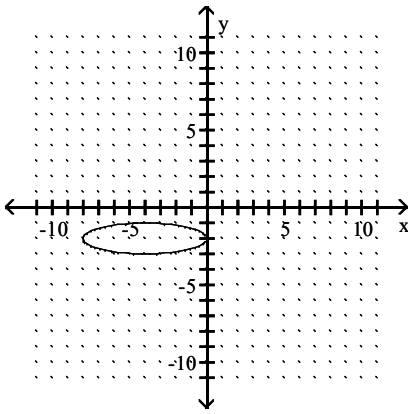
A) Not a function

B) Function

Answer: A

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692)

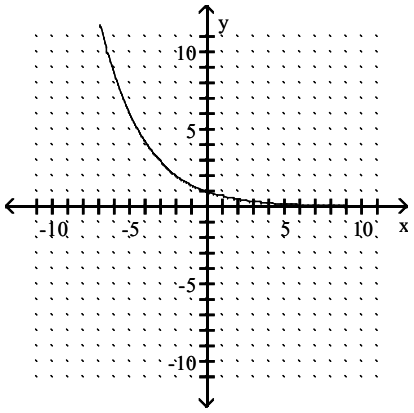


A) Function

B) Not a function

Answer: B

693)

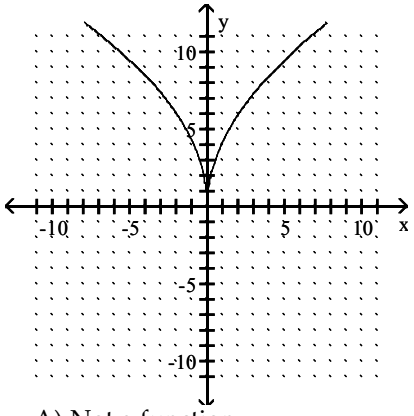


A) Not a function

B) Function

Answer: B

694)



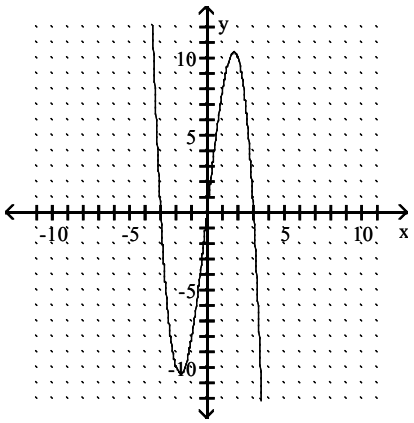
A) Not a function

B) Function

Answer: B

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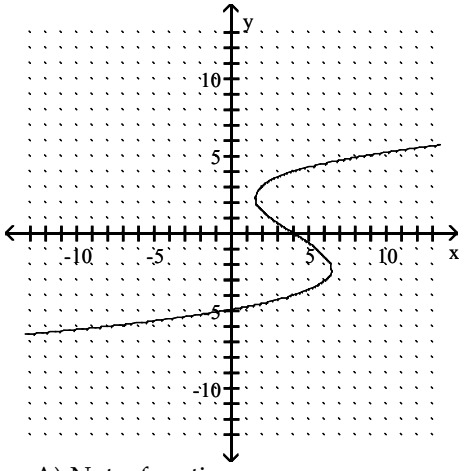
695)



A) Function B) Not a function

Answer: A

696)

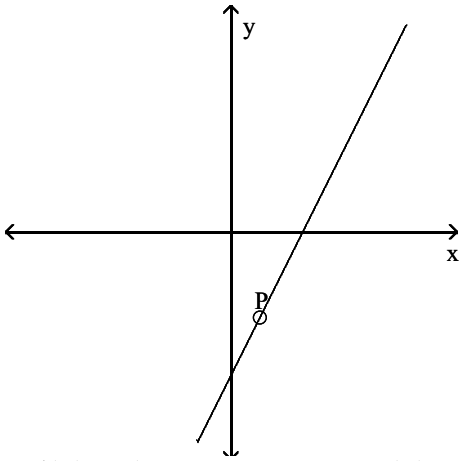


A) Not a function B) Function

Answer: A

Determine the intervals of the domain over which the function is continuous.

697) P(1, –3)

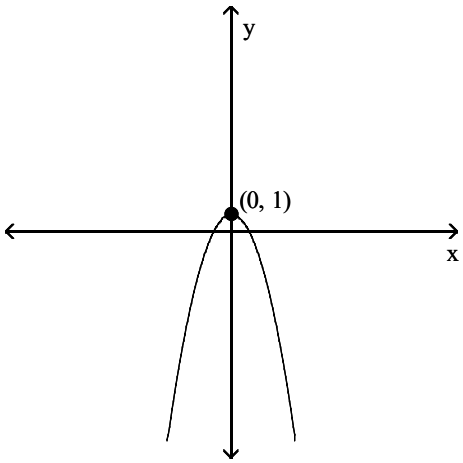


A) (–∞, ∞) B) (–∞, 1) ∪ (1, ∞) C) (–∞, –3) ∪ (–3, ∞) D) (–∞, 1] ∪ [1, ∞)

Answer: B

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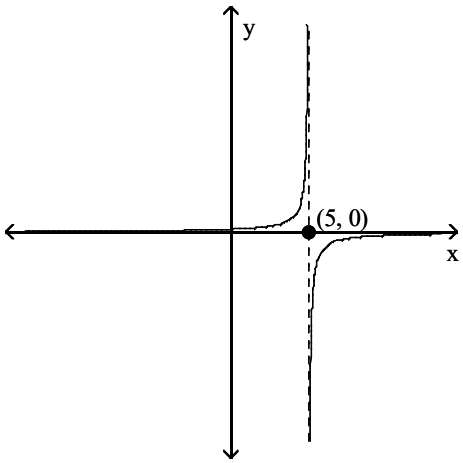
698)



A) (−∞, 1] B) (1, ∞) C) (−∞, ∞) D) [0, ∞)

Answer: C

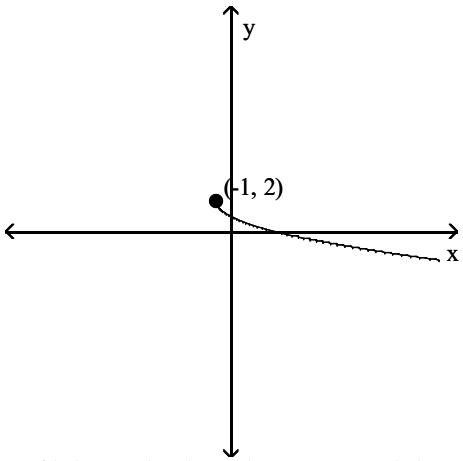
699)



A) (−∞, 0) ∪ (0, ∞) B) (−∞, ∞) C) (−∞, 5) ∪ (5, ∞) D) (−∞, 5] ∪ [5, ∞)

Answer: C

700)

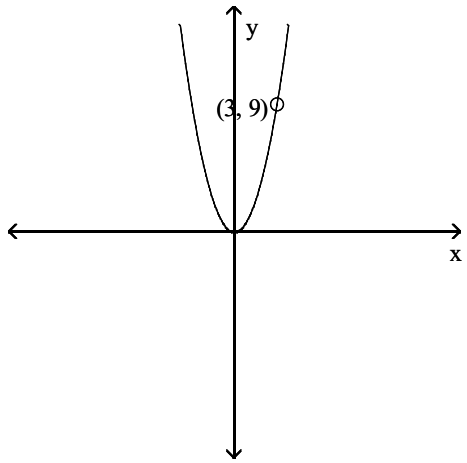


A) (−∞, −1) ∪ (−1, ∞) B) (−∞, ∞) C) [−1, ∞) D) [2, ∞)

Answer: C

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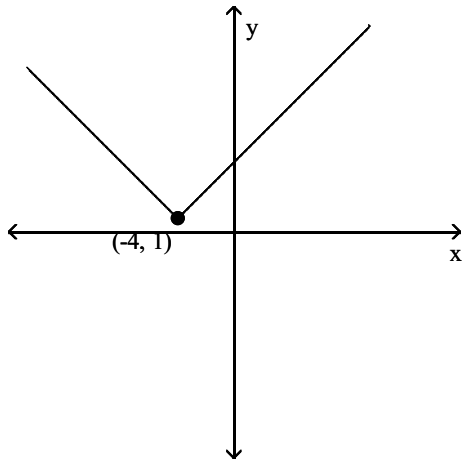
701)



A) (−∞, 3) ∪ (3, ∞) B) (−∞, 9) ∪ (9, ∞) C) (−∞, ∞) D) [0, ∞]

Answer: A

702)



A) (−∞, −4) ∪ (−4, ∞) B) (−∞, 1) ∪ (1, ∞) C) (−∞, ∞) D) [−4, ∞)

Answer: C

Describe how the graph of the equation relates to the graph of $y = x^2$.

703) $f(x) = (x - 5)^2$

A) a translation 5 units down B) a translation 5 units up

C) a translation 5 units to the left D) a translation 5 units to the right

Answer: D

704) $f(x) = x^2 + 2$

A) a translation 2 units to the left B) a translation 2 units to the right

C) a translation 2 units up D) a translation 2 units down

Answer: C

705) $f(x) = 6x^2$

A) a horizontal stretch by a factor of 6 B) a translation 6 units to the right

C) a vertical stretch by a factor of 6 D) a translation 6 units up

Answer: C

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706) $f(x) = -(x + 3)^2$

A) a translation 3 units to the right and a reflection across the y–axis
B) a translation 3 units up and a reflection across the x–axis
C) a translation 3 units to the right and a reflection across the x–axis
D) a translation 3 units to the left and a reflection across the x–axis

Answer: D

707) $f(x) = (x - 4)^2 + 3$

A) a translation 4 units to the right and 3 units up
B) a translation 4 units to the left and 3 units up
C) a translation 4 units to the left and 3 units down
D) a translation 3 units to the right and 4 units up

Answer: A

708) $f(x) = \frac{1}{5}x^2 - 2$

A) vertical shrinking by a factor of $\frac{1}{5}$ and a translation 2 units to the left
B) vertical shrinking by a factor of $\frac{1}{5}$ and a translation 2 units down
C) vertical stretching by a factor of 5 and a translation 2 units down
D) vertical stretching by a factor of 5 and a translation 2 units to the right

Answer: B

Describe how the graph of the equation relates to the graph of $y = \sqrt[3]{x}$.

709) $f(x) = 6\sqrt[3]{x}$

A) a reflection across the y–axis
B) a reflection across the x–axis
C) a vertical stretching by a factor of 6
D) a translation 6 units up

Answer: C

710) $f(x) = \sqrt[3]{x} + 3$

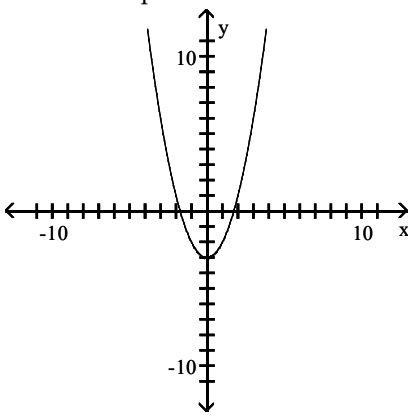
A) a translation 3 units to the right
B) a vertical stretching by a factor of 3
C) a reflection across the x–axis
D) a translation 3 units up

Answer: D

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Solve the problem.

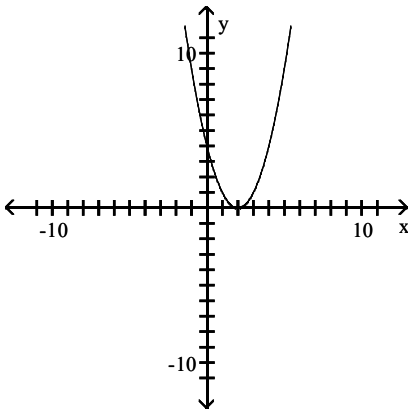
711) Select the equation that describes the graph shown.



A) $y = x^2 - 3$ B) $y = (x + 3)^2$ C) $y = (x - 3)^2$ D) $y = (x - 3)^2 + 1$

Answer: A

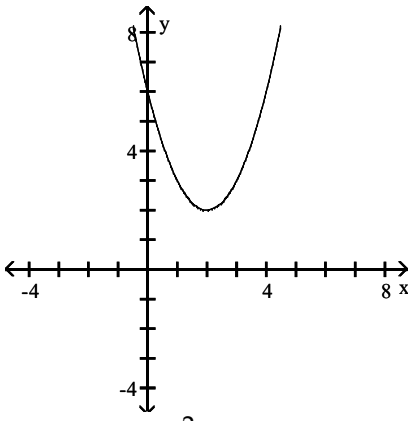
712) Select the equation that describes the graph shown.



A) $y = x^2 - 2$ B) $y = (x + 2)^2$ C) $y = (x - 2)^2$ D) $y = x^2 + 2$

Answer: C

713) Select the equation that describes the graph shown.

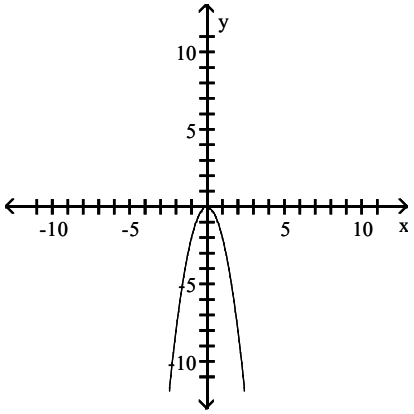


A) $y = (x + 2)^2 - 2$ B) $y = (x + 2)^2 + 2$ C) $y = (x - 2)^2 + 2$ D) $y = x^2 - 2$

Answer: C

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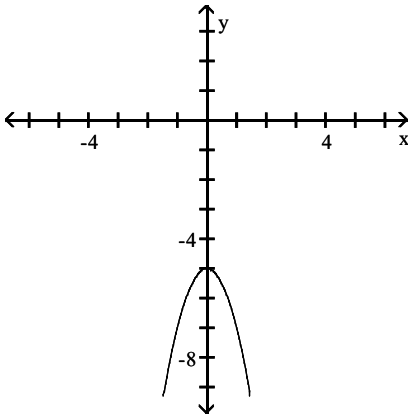
714) Select the equation that describes the graph shown.



A) $y = 2x^2$ B) $y = -\frac{1}{2}x^2$ C) $y = -x^2$ D) $y = -2x^2$

Answer: D

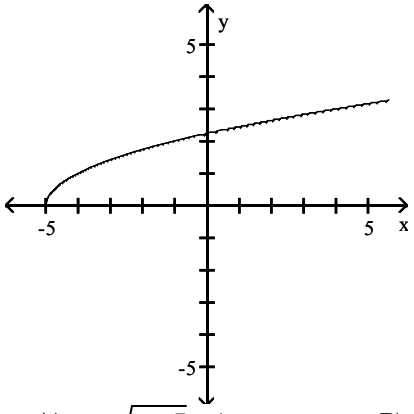
715) Select the equation that describes the graph shown.



A) $y = -2(x + 5)^2$ B) $y = -2(x - 5)^2 + 2$ C) $y = -2(x - 5)^2$ D) $y = -2x^2 - 5$

Answer: D

716) Select the equation that describes the graph shown.

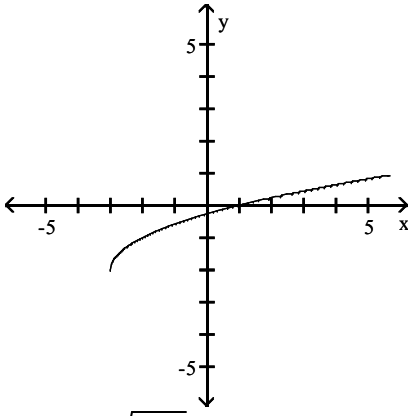


A) $y = \sqrt{x + 5} + 1$ B) $y = \sqrt{x} + 5$ C) $y = \sqrt{x - 5}$ D) $y = \sqrt{x + 5}$

Answer: D

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717) Select the equation that describes the graph shown.

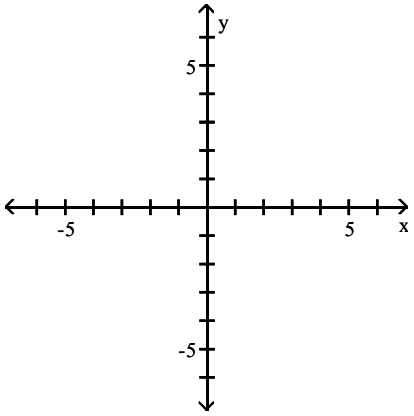


A) $y = \sqrt{x - 3} - 2$ B) $y = \sqrt{x} - 2$ C) $y = \sqrt{x + 3} - 2$ D) $y = \sqrt{x + 3} + 2$

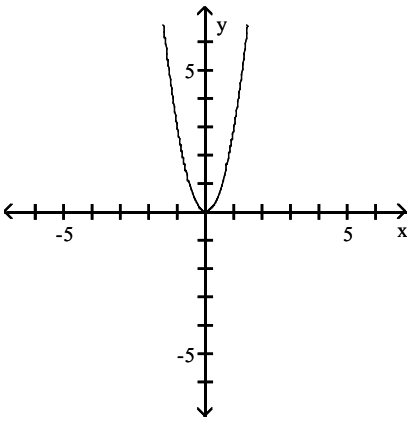
Answer: C

Graph the function.

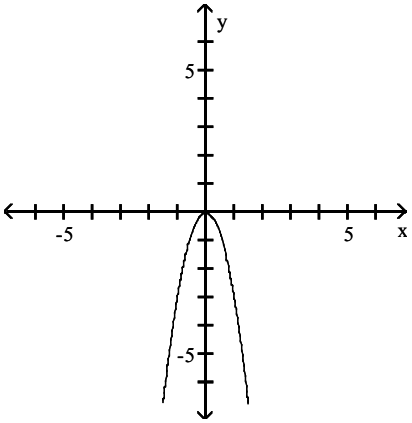
718) $f(x) = 3x^2$



A)

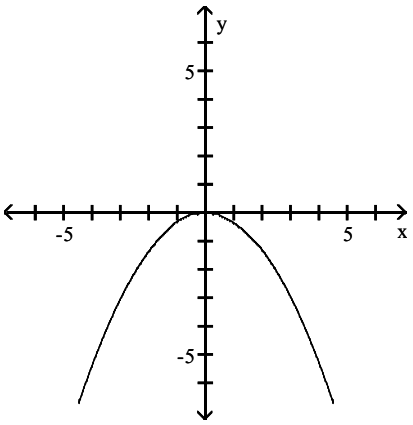


B)

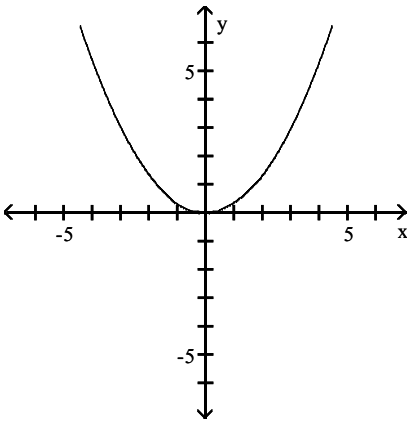


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C)

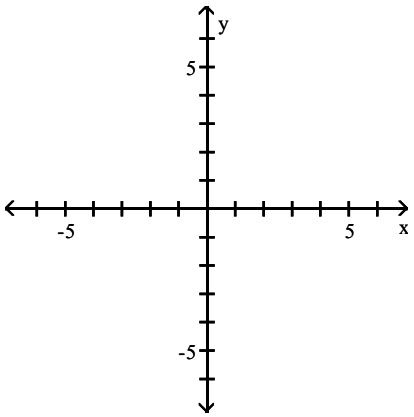


D)

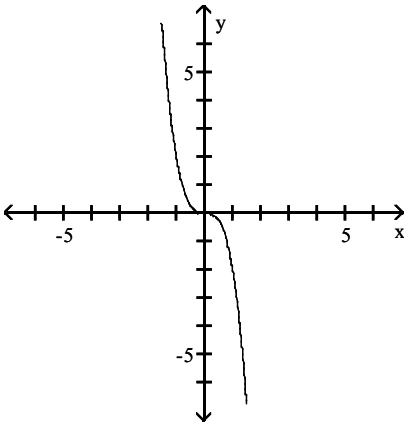


Answer: A

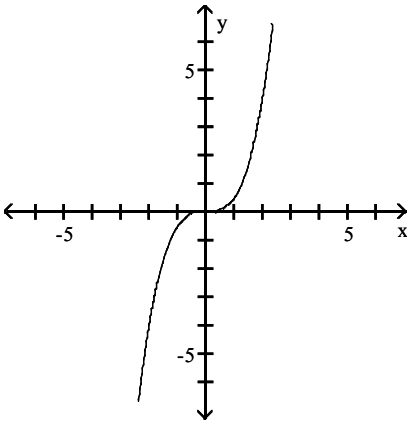
719) $f(x) = \frac{1}{2}x^3$



A)

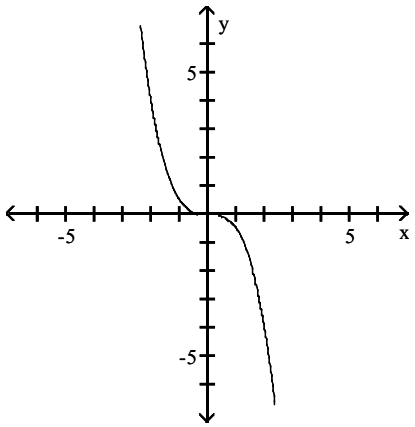


B)

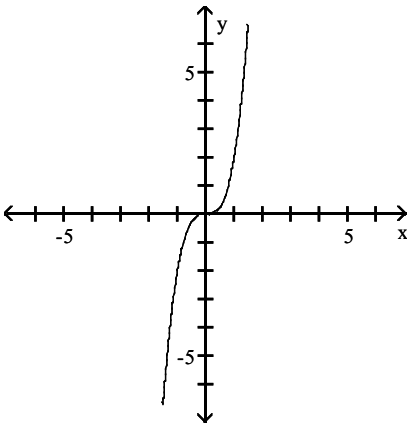


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C)

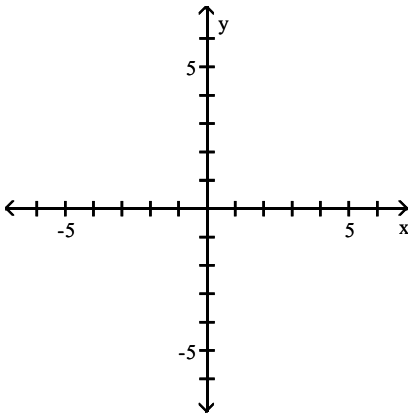


D)

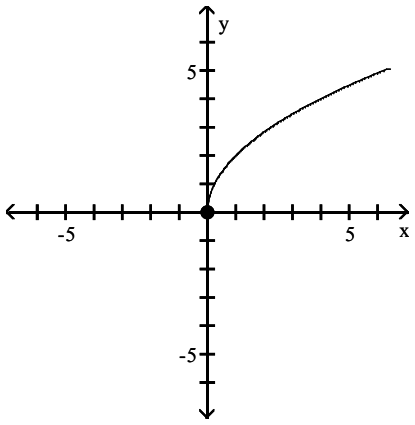


Answer: B

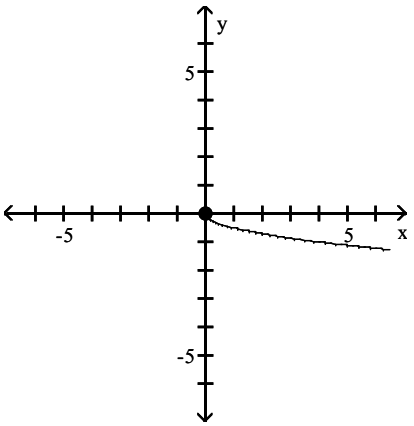
720) $f(x) = 2\sqrt{x}$



A)

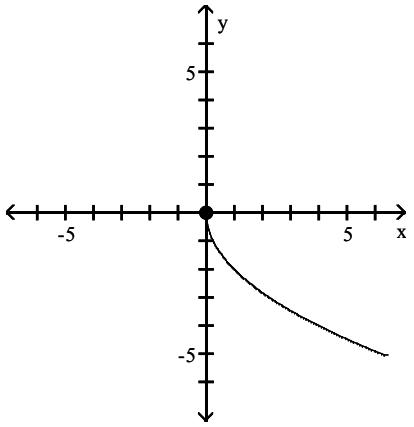


B)

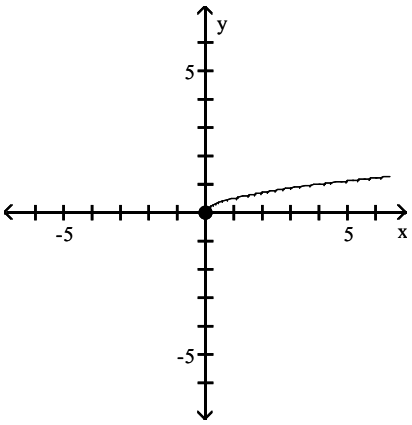


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C)

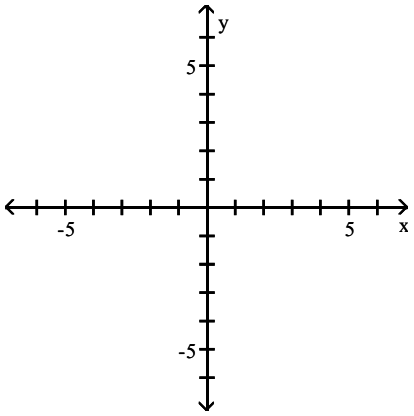


D)

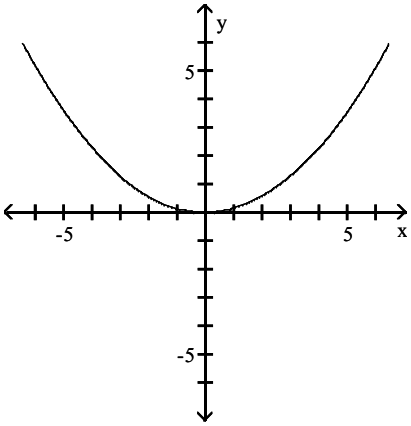


Answer: A

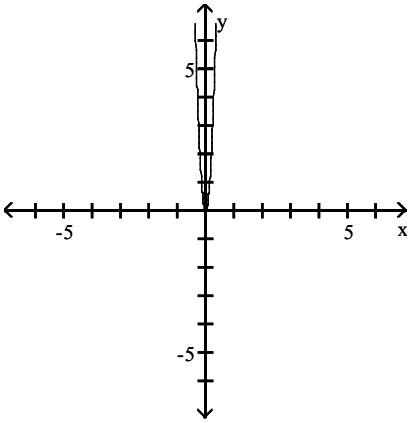
721) $f(x) = (7x)^2$



A)

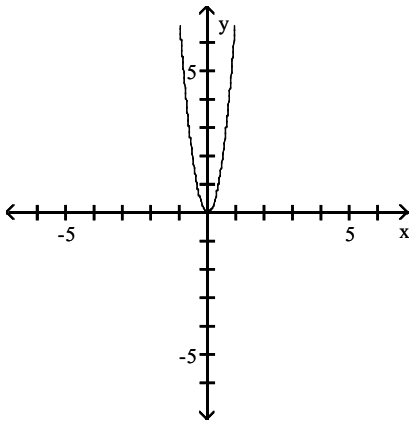


B)

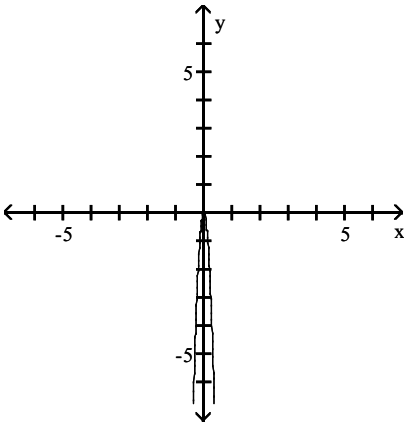


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C)

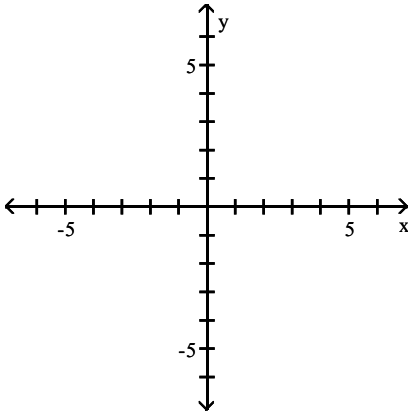


D)

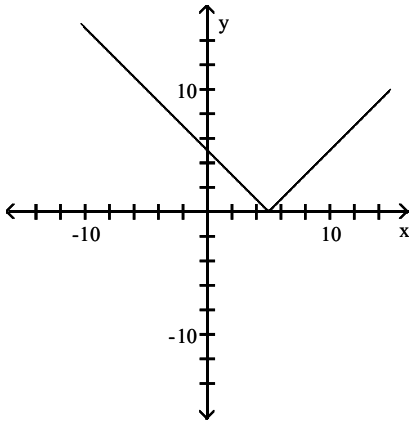


Answer: B

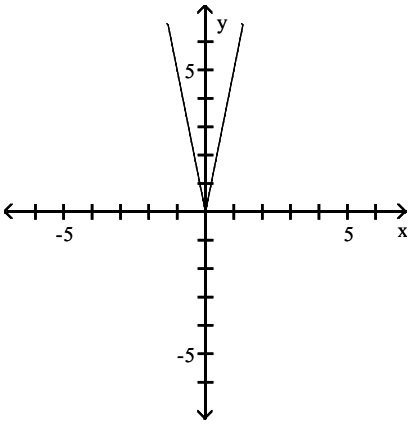
722) f(x) = |5x|



A)

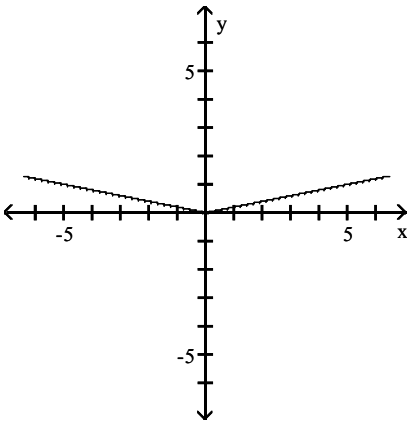


B)

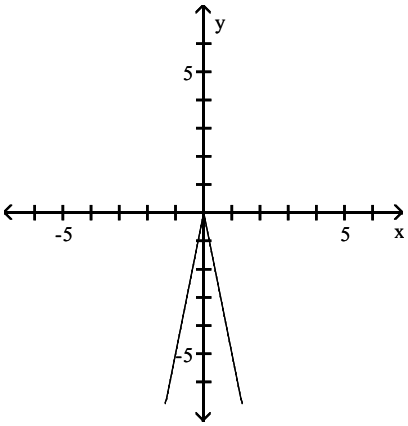


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C)

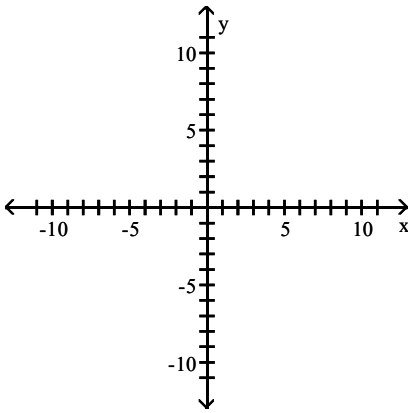


D)

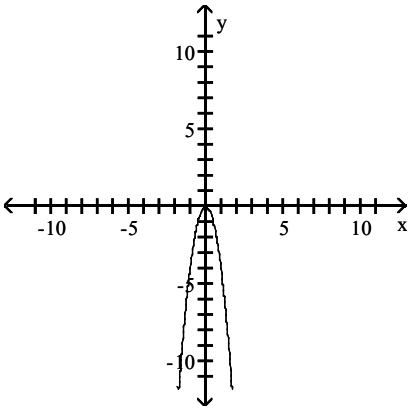


Answer: B

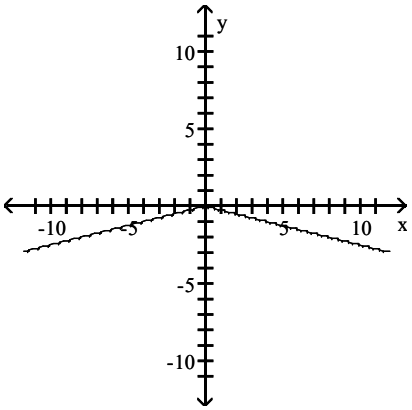
723) $f(x) = -4^{|x|}$



A)

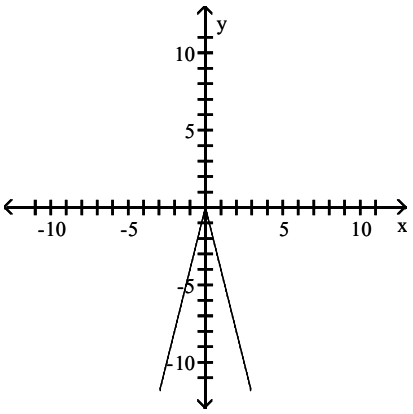


B)

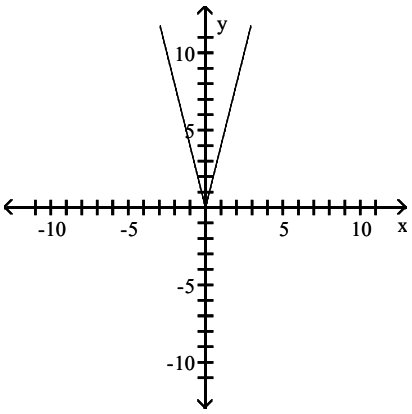


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C)

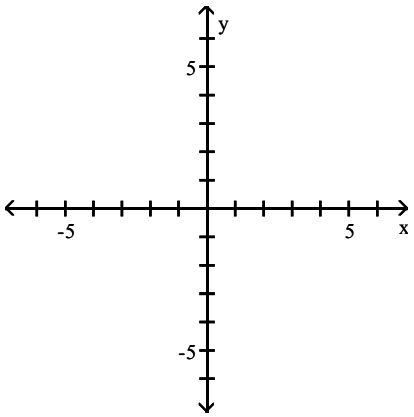


D)

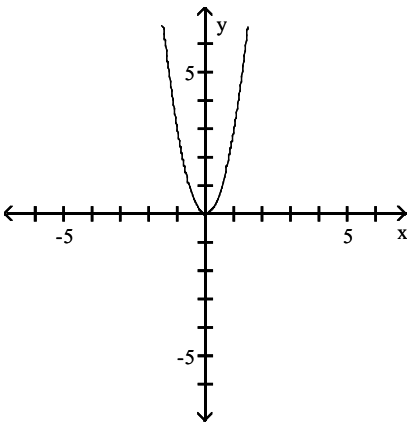


Answer: C

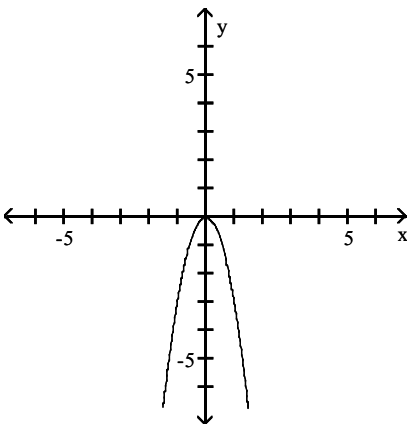
724) $f(x) = -\frac{1}{3}x^2$



A)

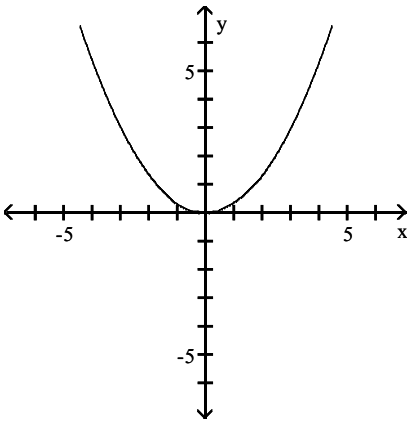


B)

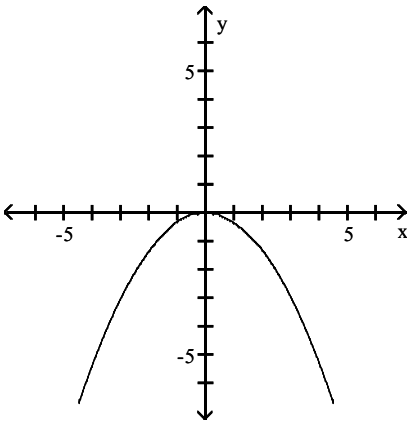


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C)

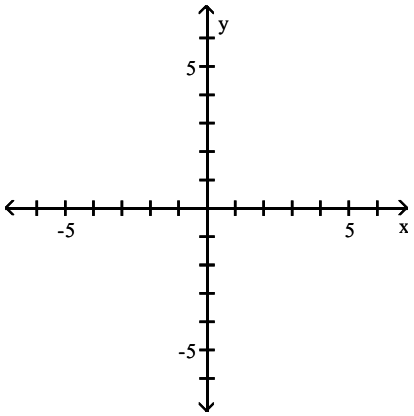


D)

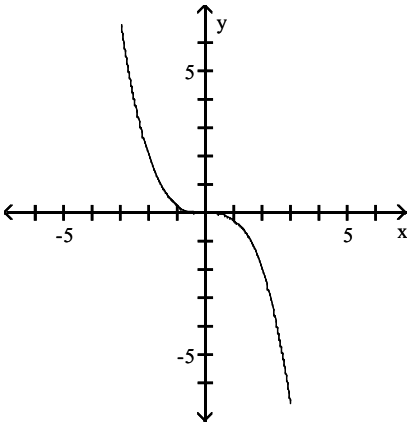


Answer: D

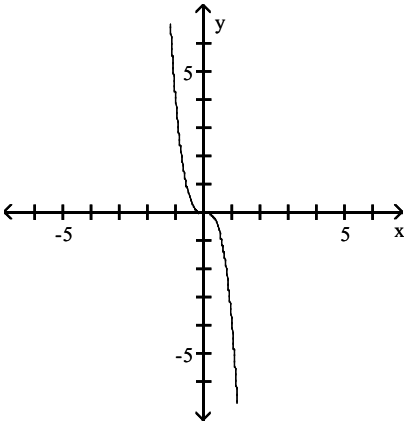
725) $f(x) = 4(-x)^3$



A)

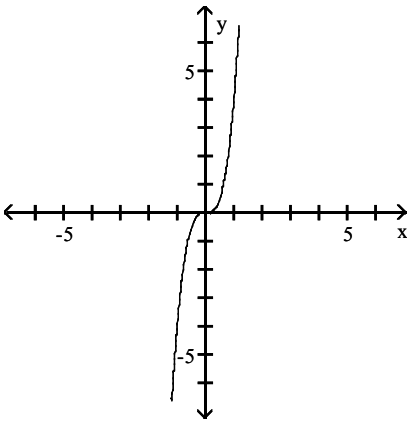


B)

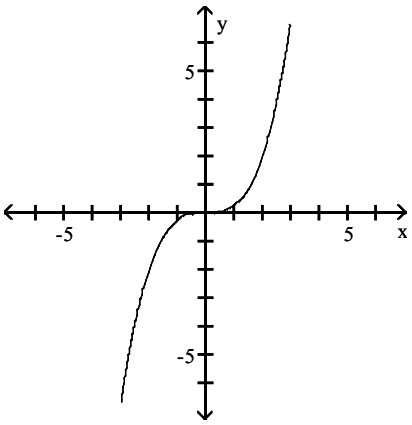


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C)

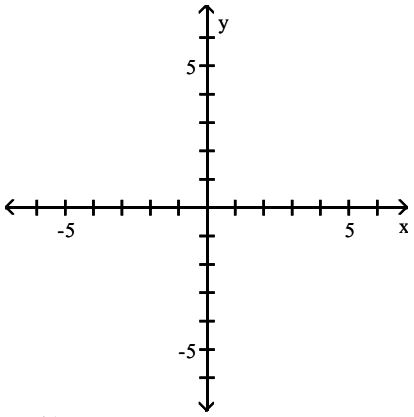


D)

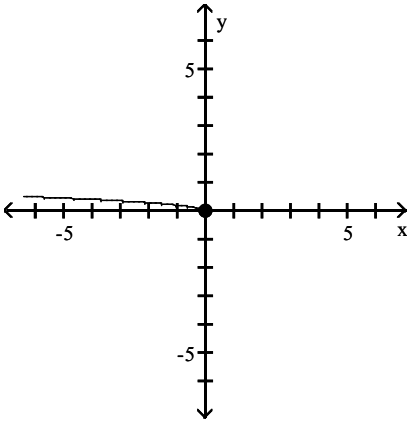


Answer: B

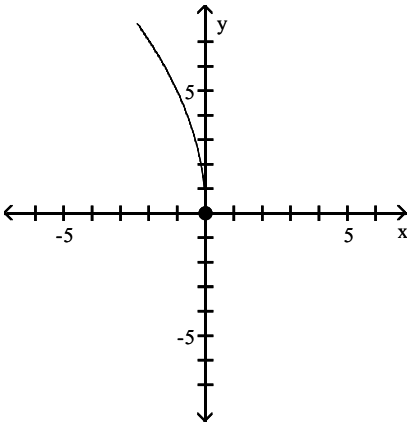
726) $f(x) = \frac{1}{5}\sqrt{-x}$



A)

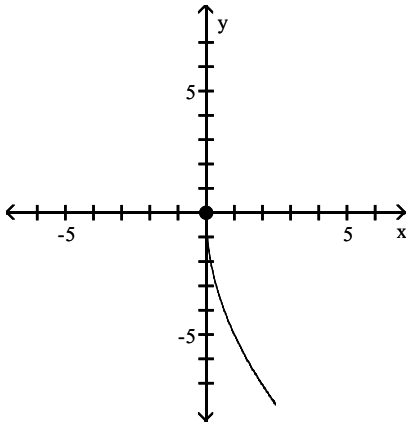


B)

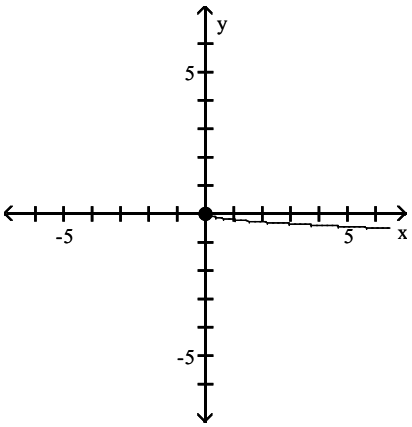


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C)

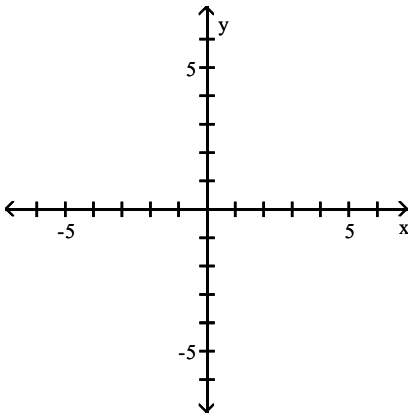


D)

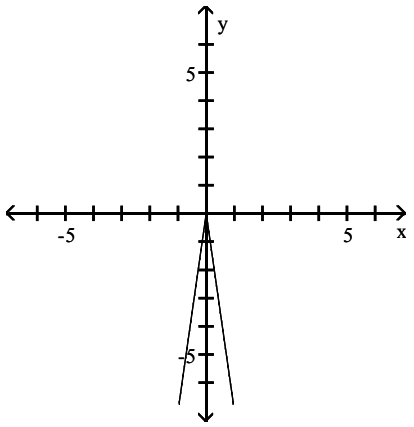


Answer: A

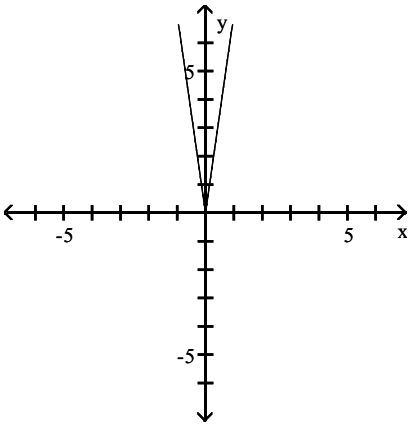
727) $f(x) = \frac{1}{7}|-x|$



A)

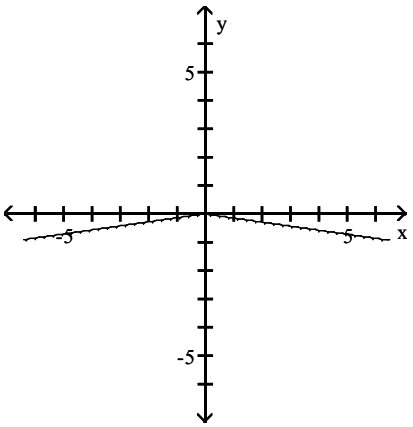


B)

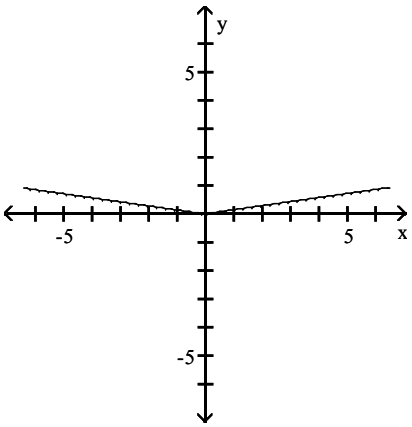


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C)

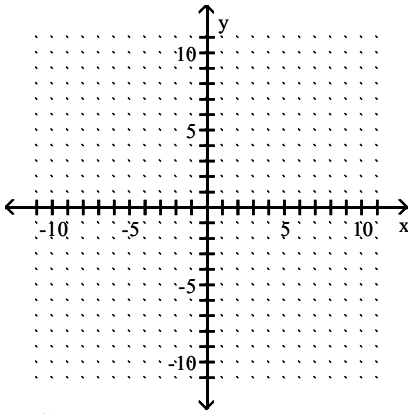


D)

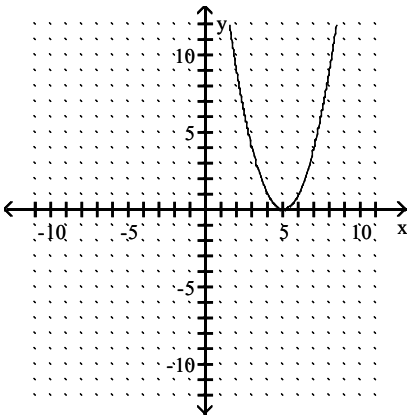


Answer: D

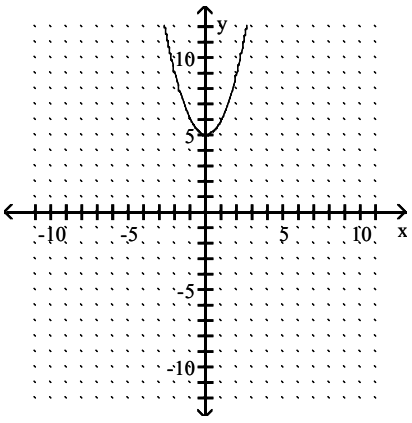
728) $y = x^2 + 5$



A)

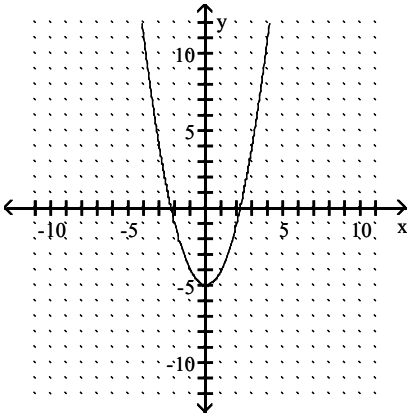


B)

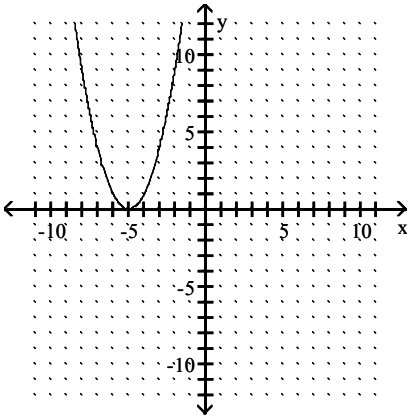


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C)

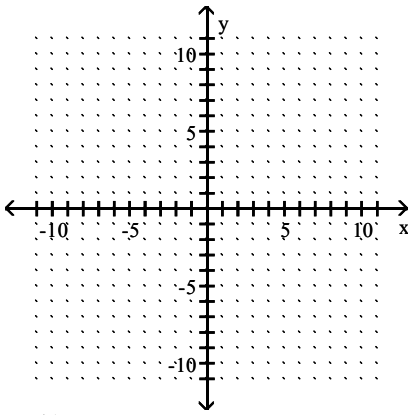


D)

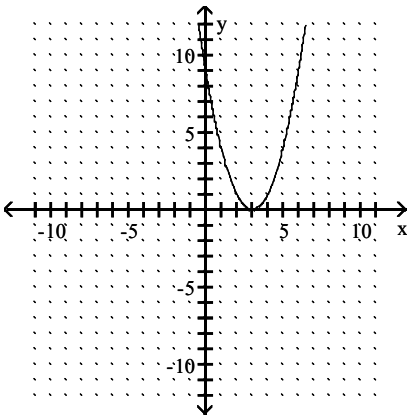


Answer: B

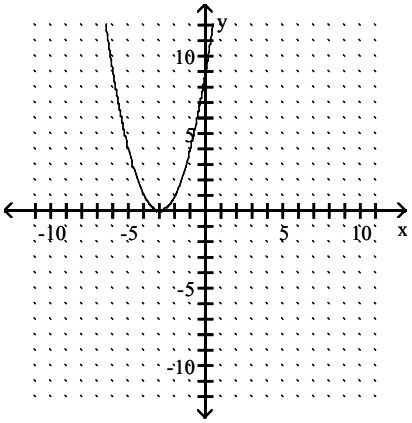
729) $f(x) = (x + 3)^2$



A)

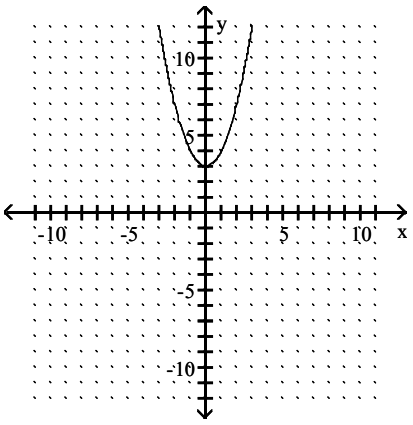


B)

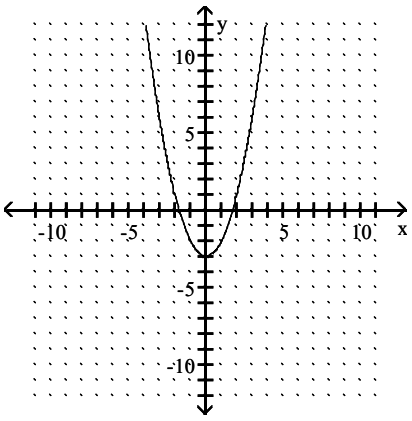


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C)

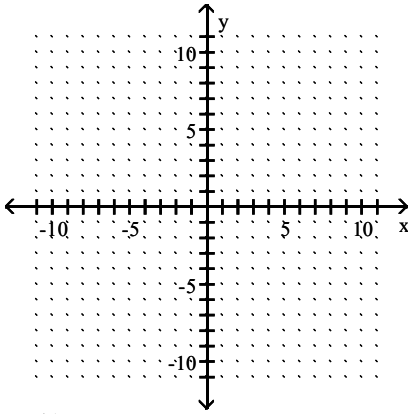


D)

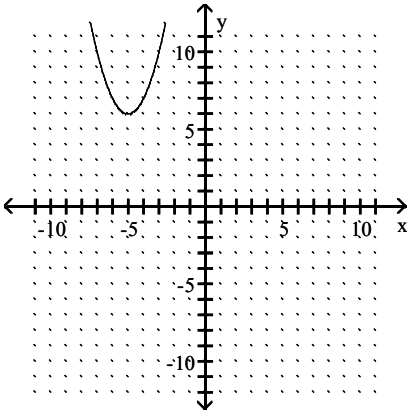


Answer: B

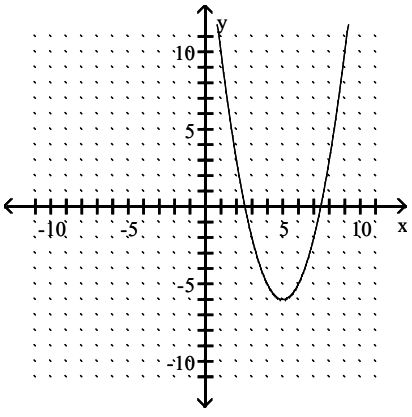
730) $y = (x + 5)^2 - 6$



A)

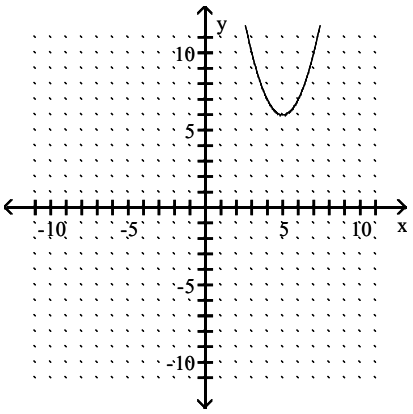


B)

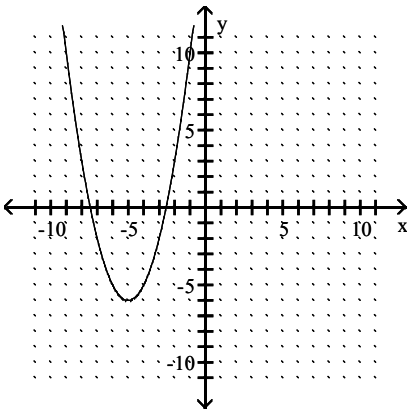


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C)

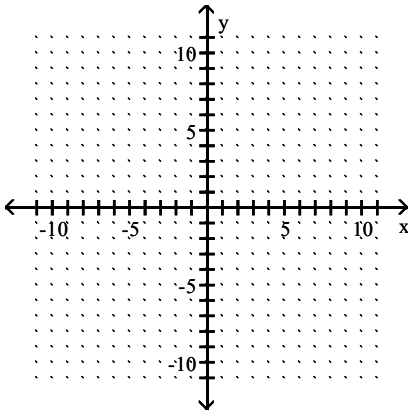


D)

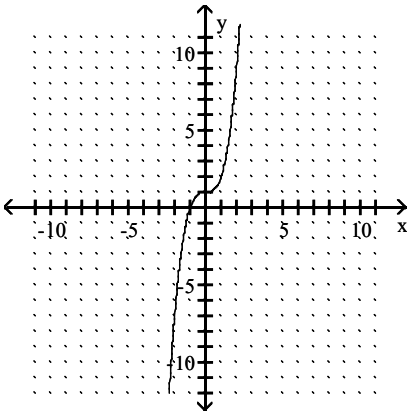


Answer: D

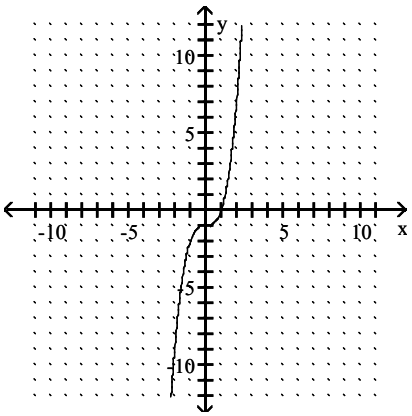
731) $f(x) = x^3 - 1$



A)

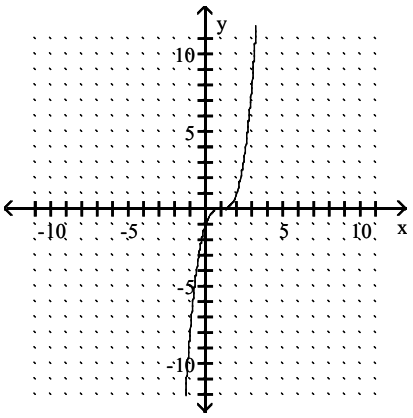


B)

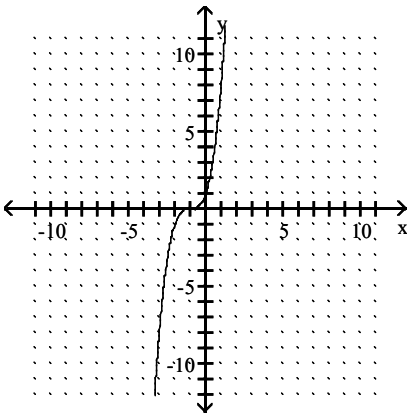


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C)

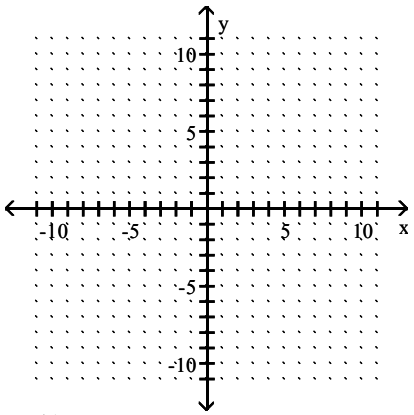


D)

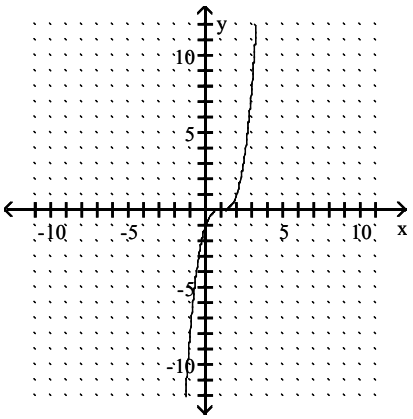


Answer: B

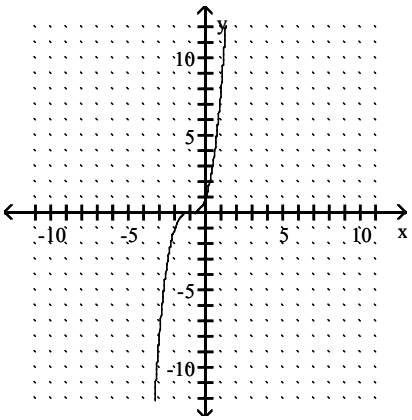
732) $y = (x + 1)^3$



A)

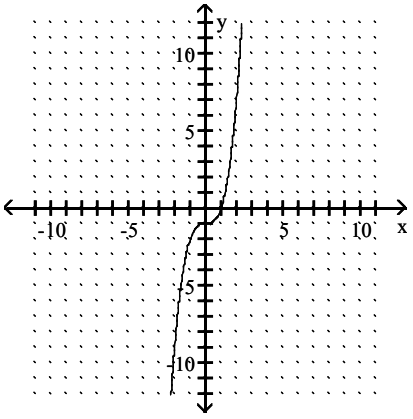


B)

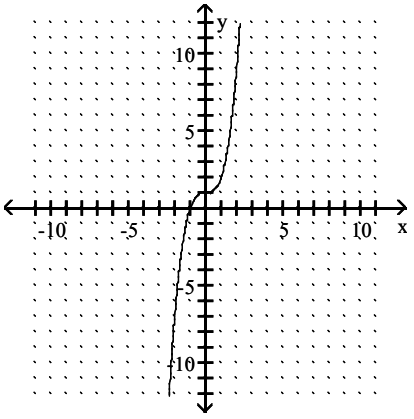


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C)

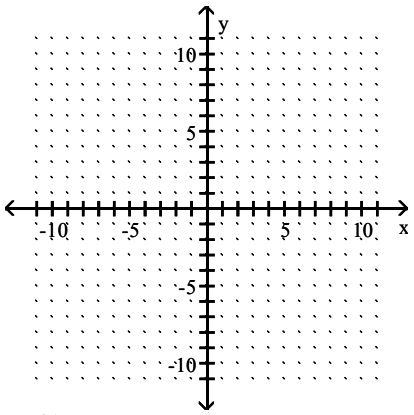


D)

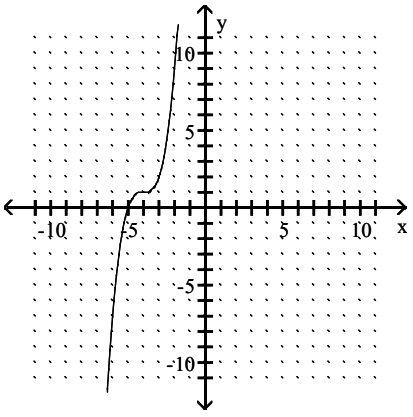


Answer: B

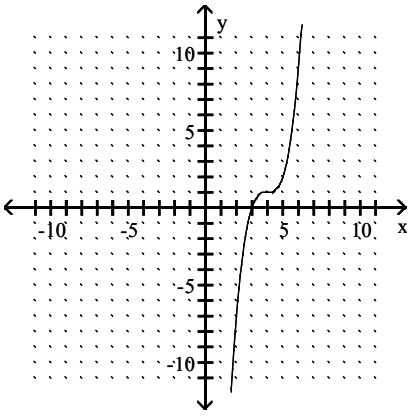
733) $f(x) = (x + 4)^3 + 1$



A)

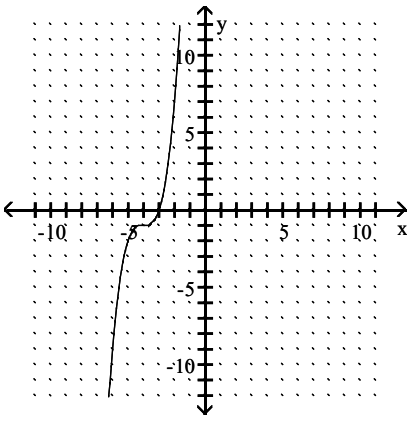


B)

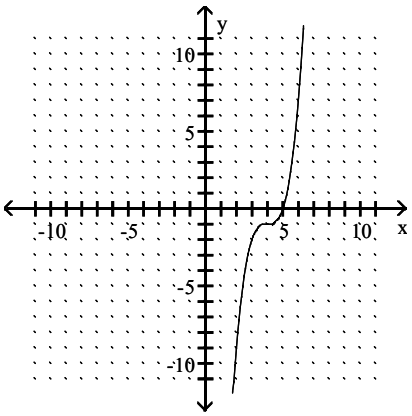


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C)

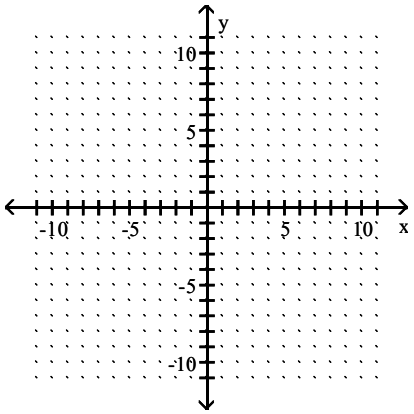


D)

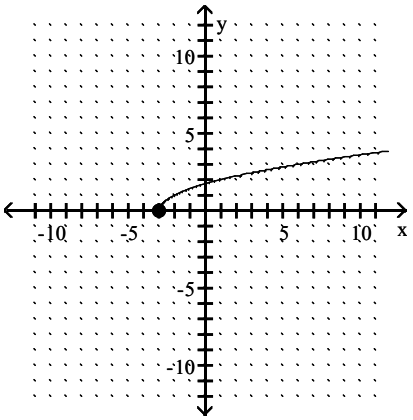


Answer: A

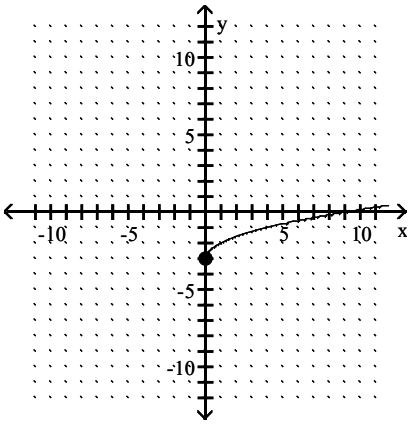
734) $y = \sqrt{x - 3}$



A)

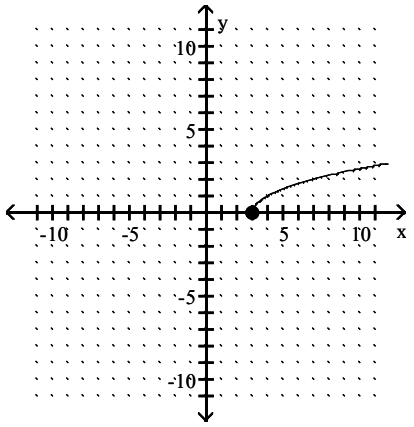


B)

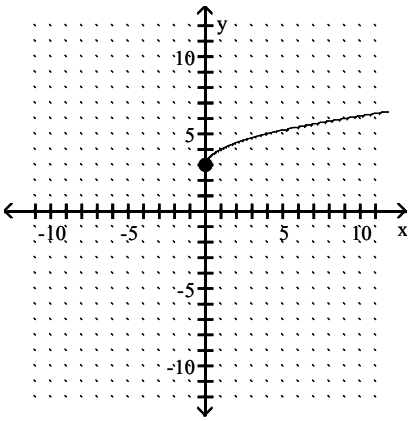


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C)

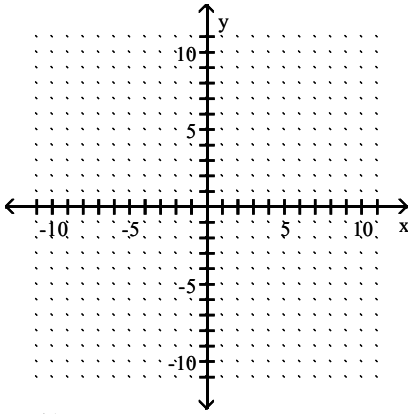


D)

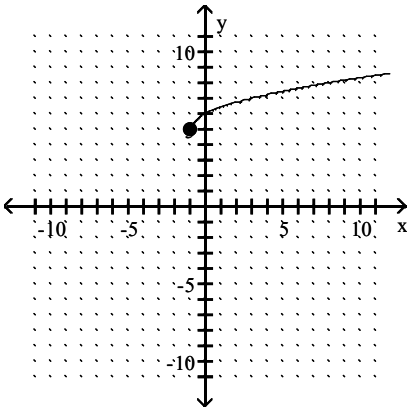


Answer: C

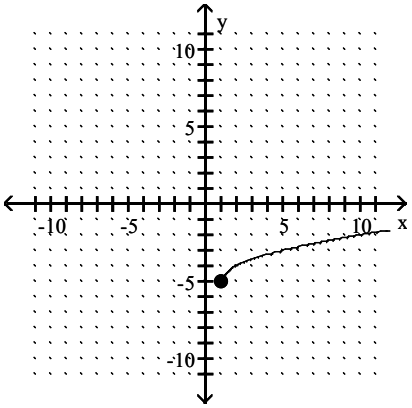
735) $y = \sqrt{x - 1} - 5$



A)

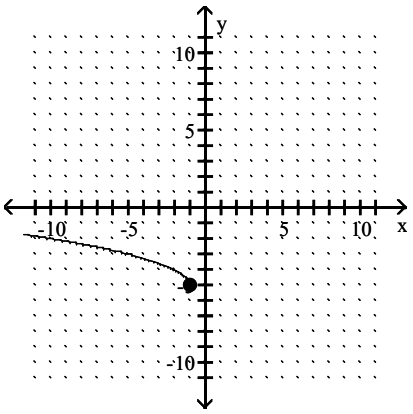


B)

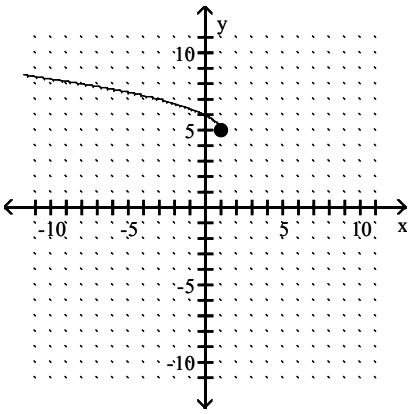


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C)

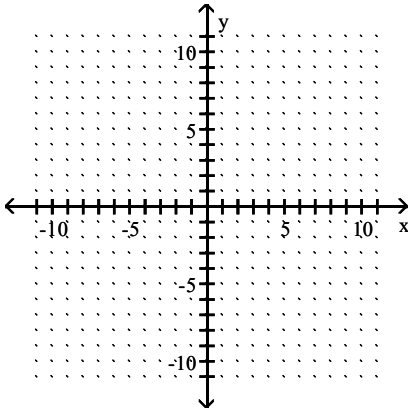


D)

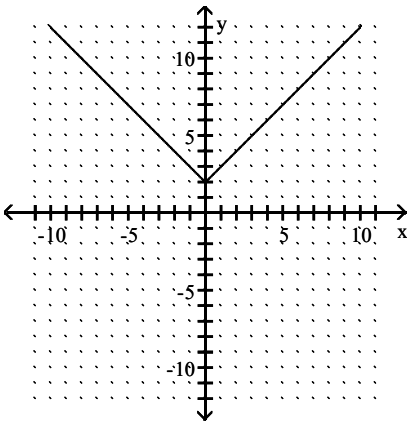


Answer: B

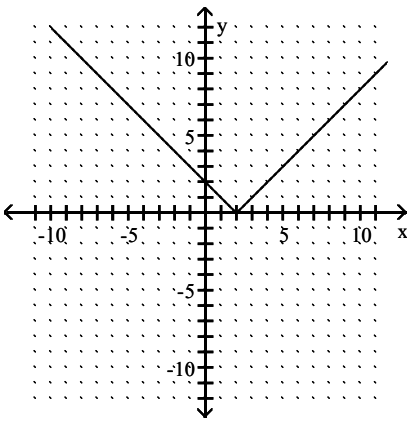
736) f(x) = |x| + 2



A)

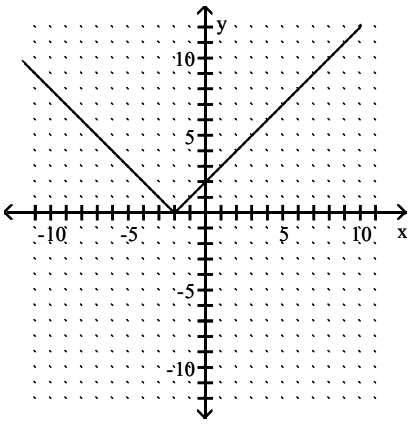


B)

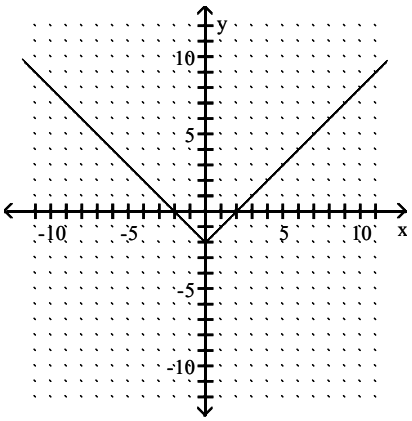


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C)

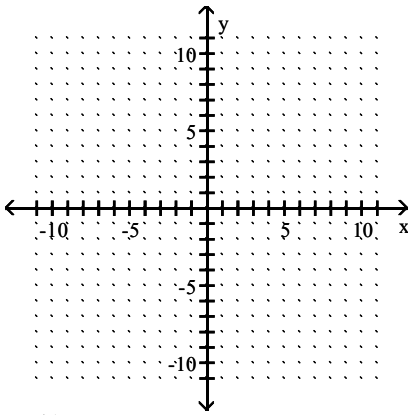


D)

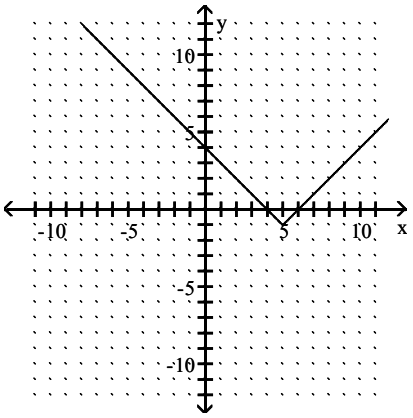


Answer: A

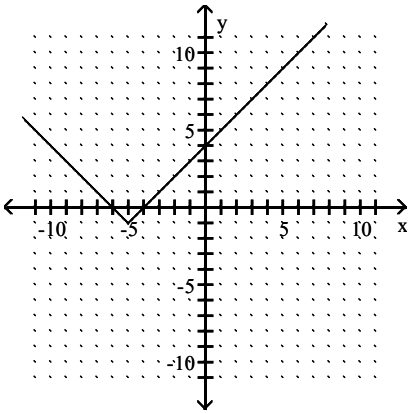
737) $y = |x - 5| + 1$



A)

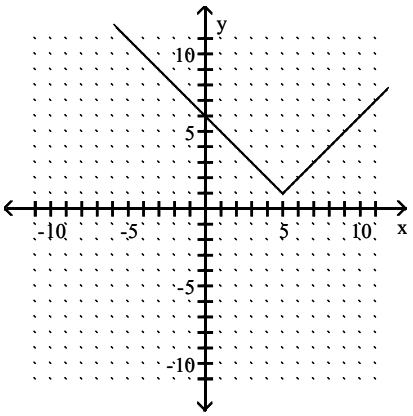


B)

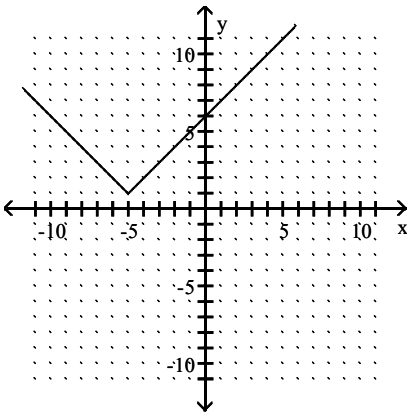


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C)

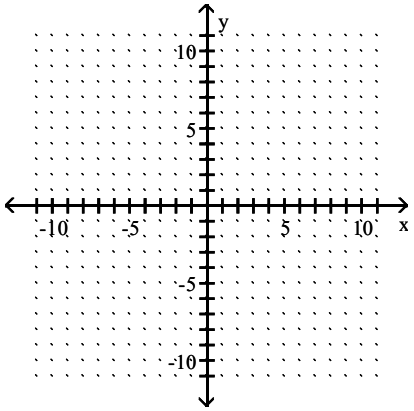


D)

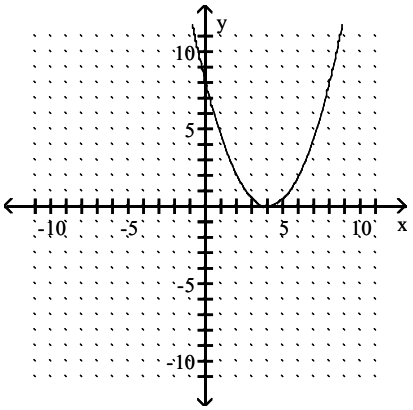


Answer: C

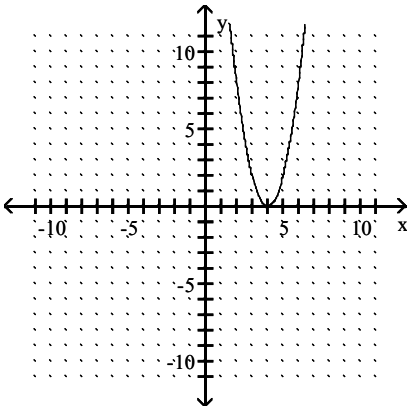
738) $y = \frac{1}{2}(x - 4)^2$



A)

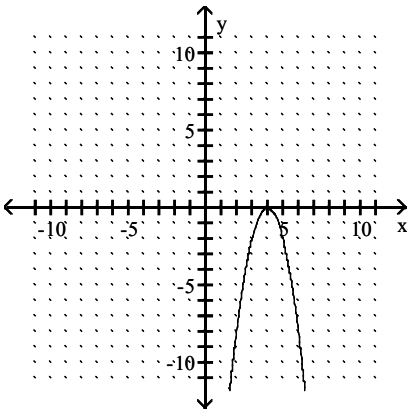


B)

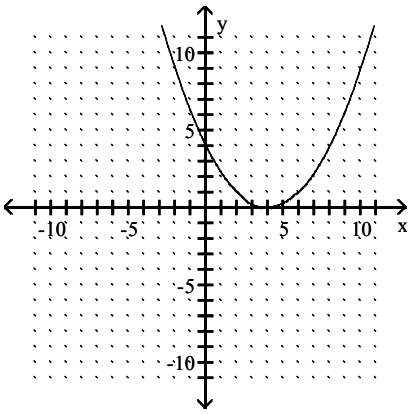


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C)

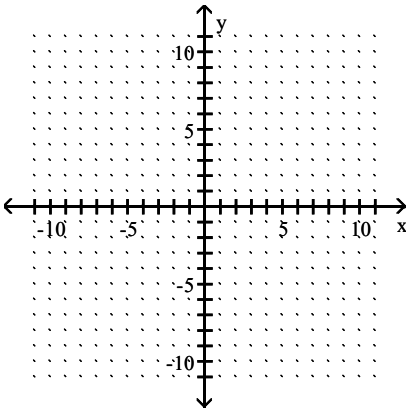


D)

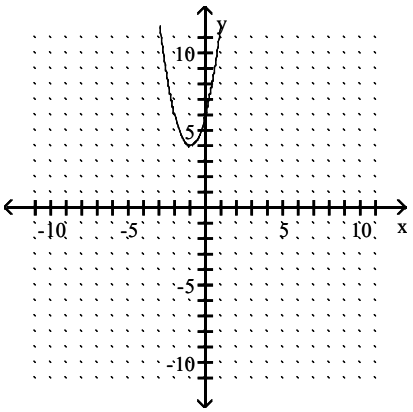


Answer: A

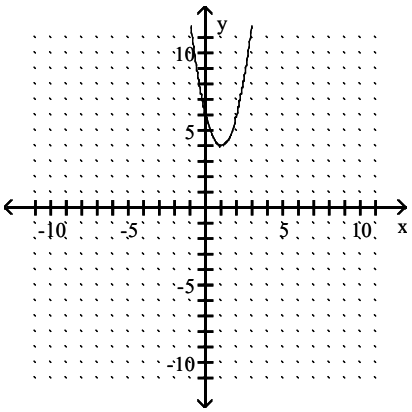
739) $f(x) = 2(x + 1)^2 + 4$



A)

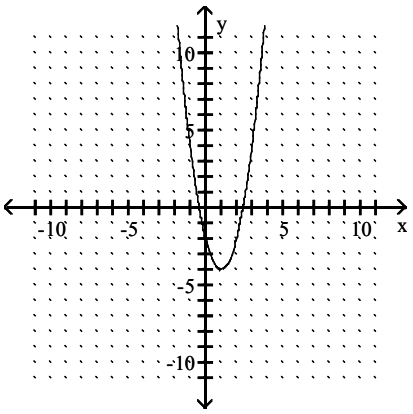


B)

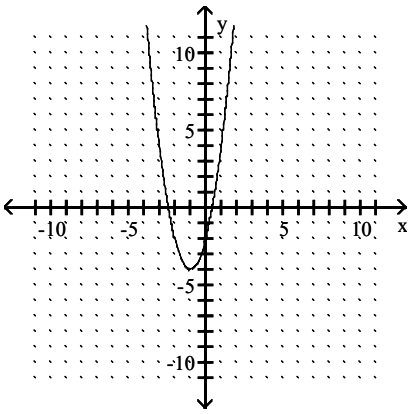


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C)

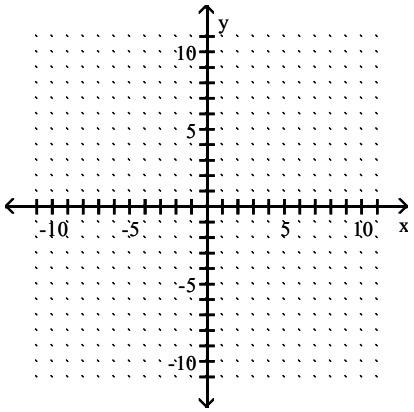


D)

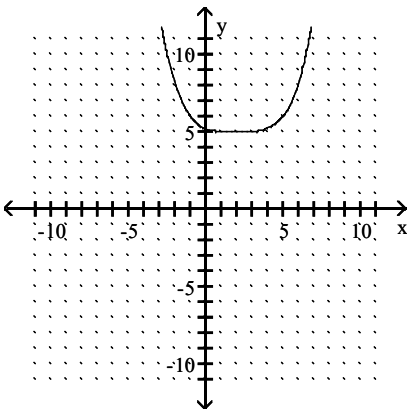


Answer: A

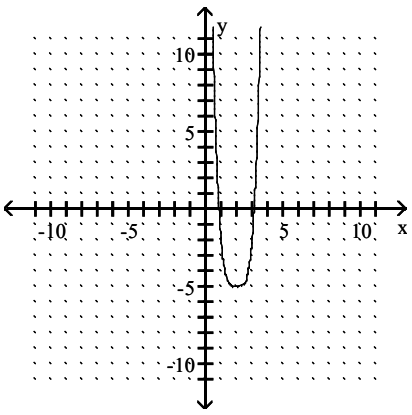
740) $y = -\frac{1}{3}(x - 2)^4 + 5$



A)

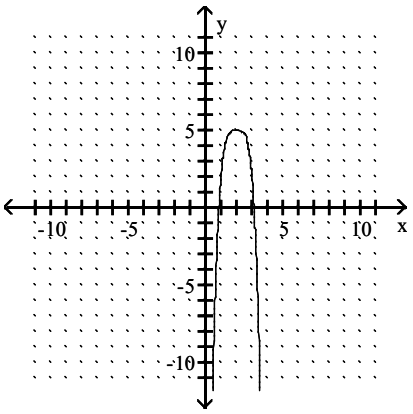


B)

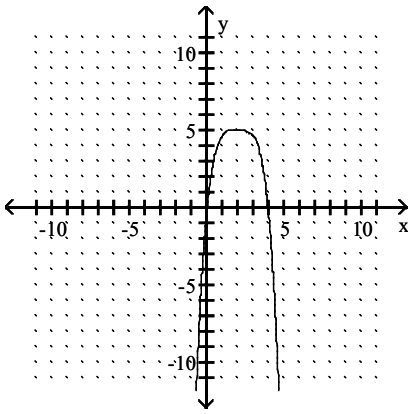


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C)

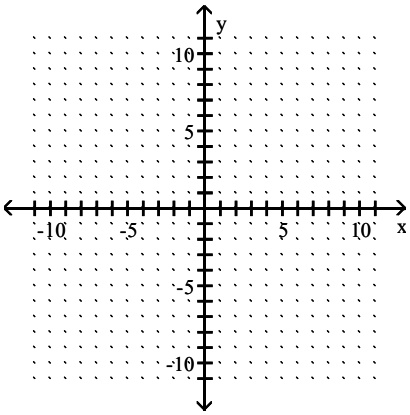


D)

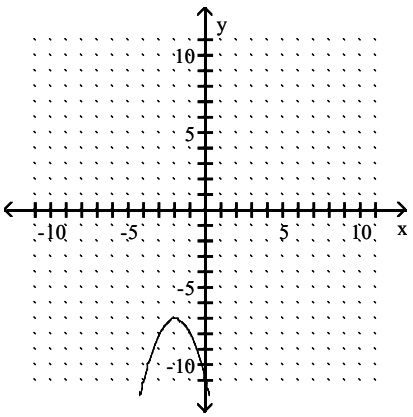


Answer: D

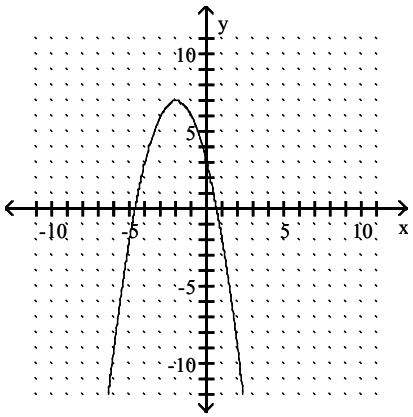
741) $f(x) = -(x + 2)^2 + 7$



A)

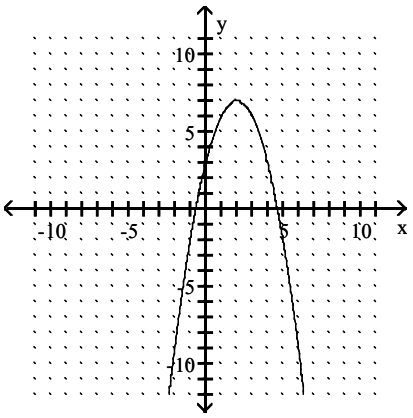


B)

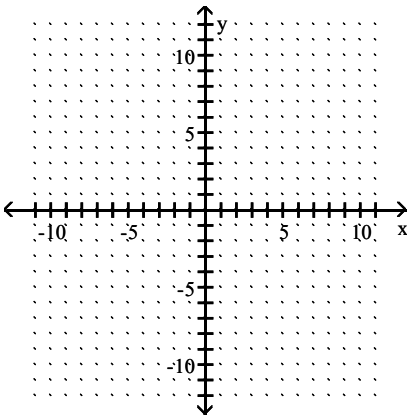


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C)

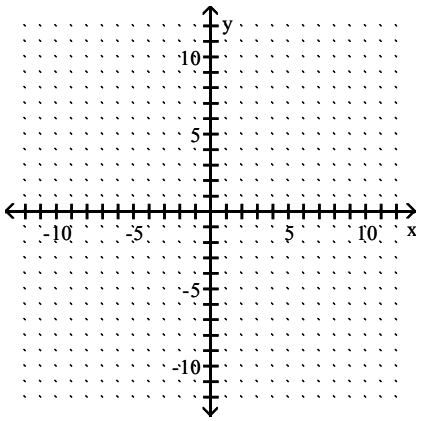


D)

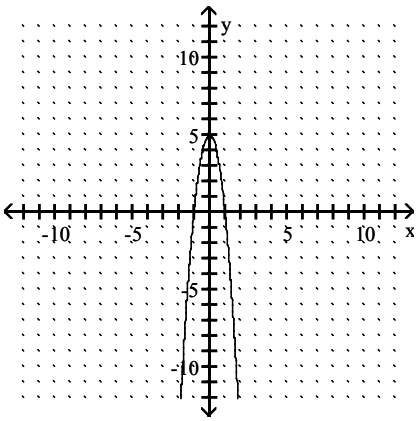


Answer: B

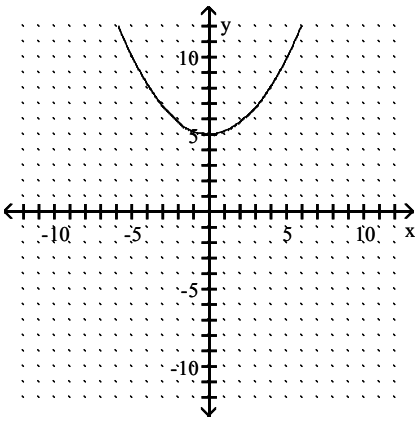
742) $y = 5x^2 - 5$



A)

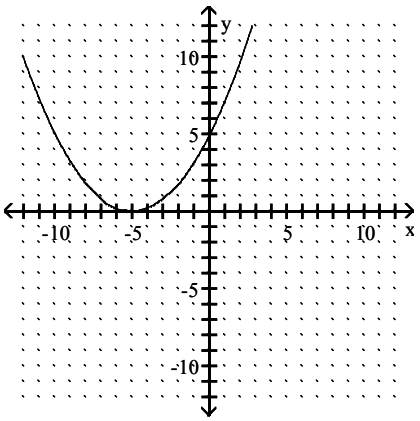


B)

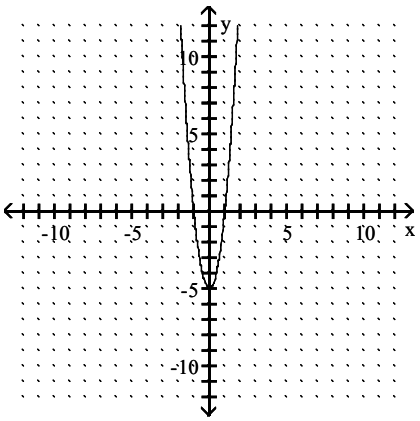


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C)

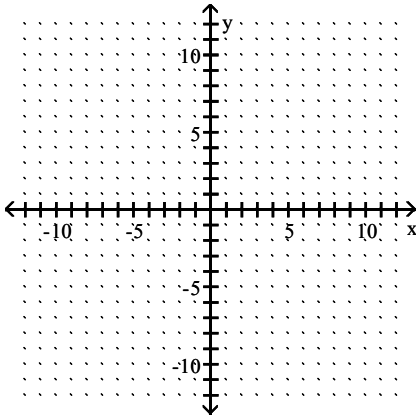


D)

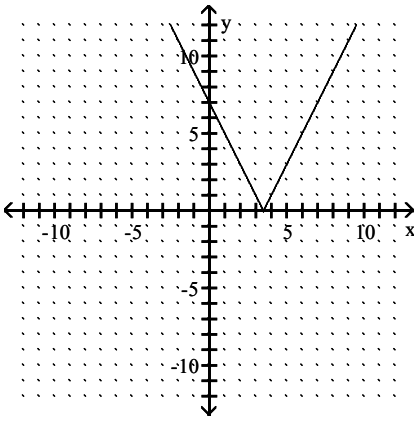


Answer: D

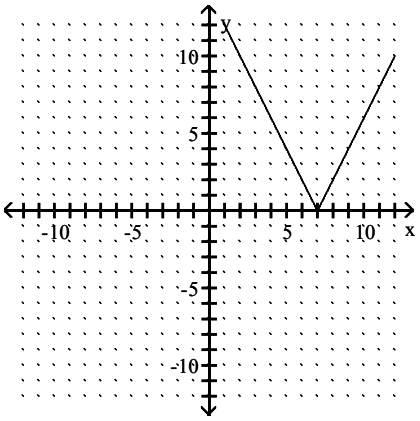
743) $y = 2|x| - 7$



A)

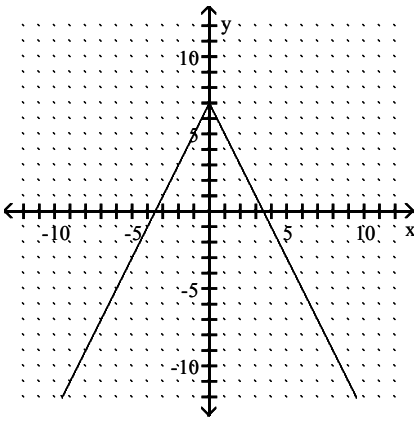


B)

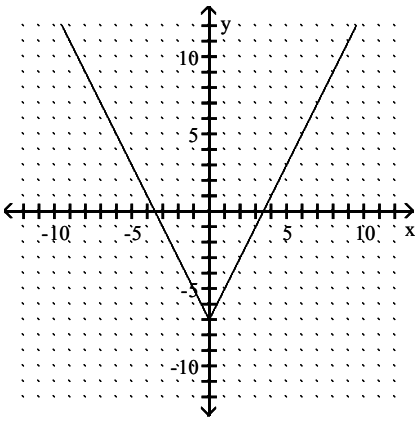


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C)

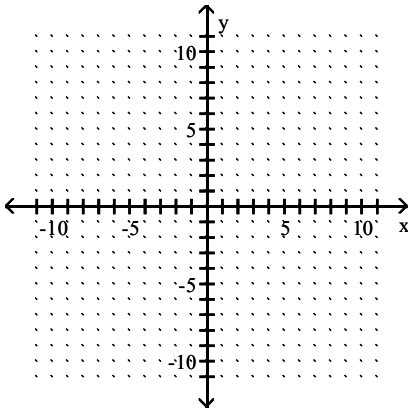


D)

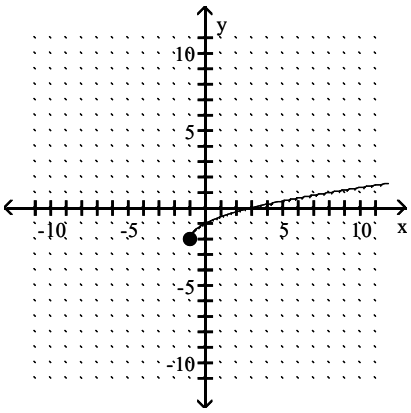


Answer: D

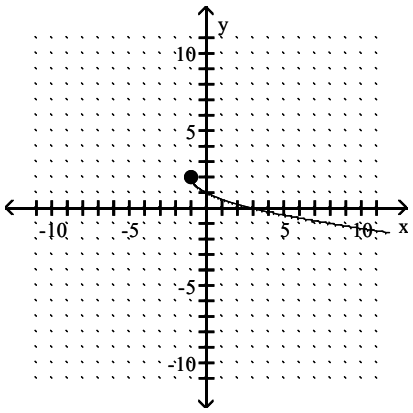
744) $g(x) = -\sqrt{x+1} - 2$



A)

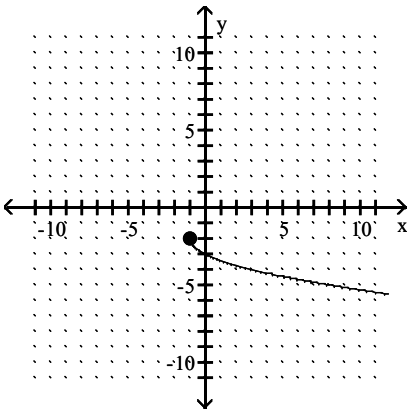


B)

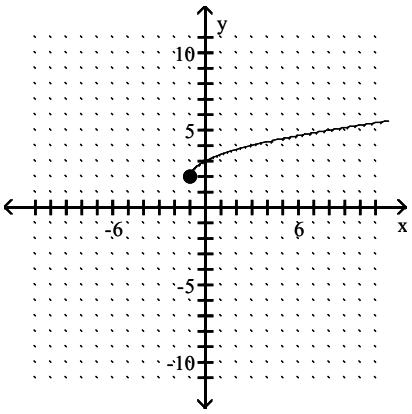


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C)

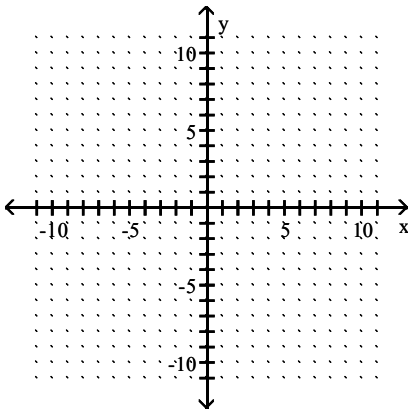


D)

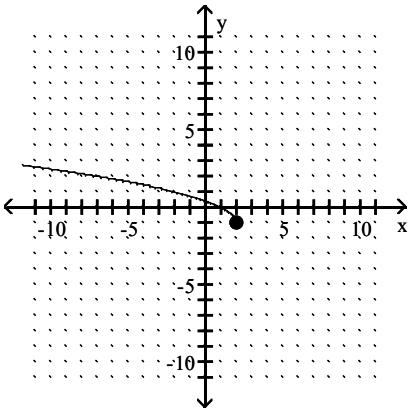


Answer: C

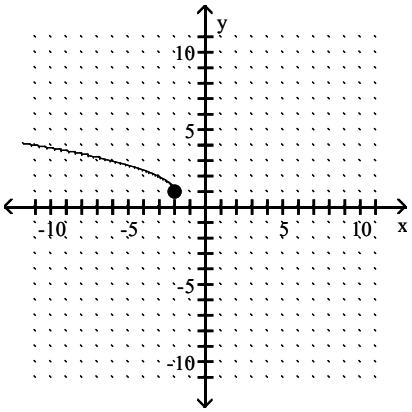
745) $h(x) = \sqrt{-x + 2} - 1$



A)

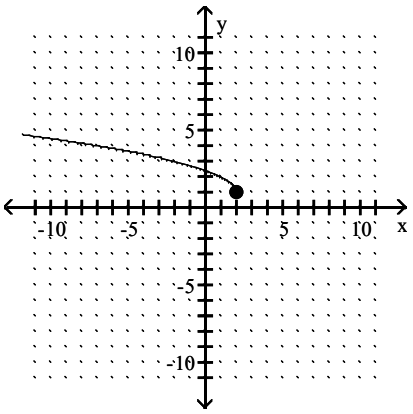


B)

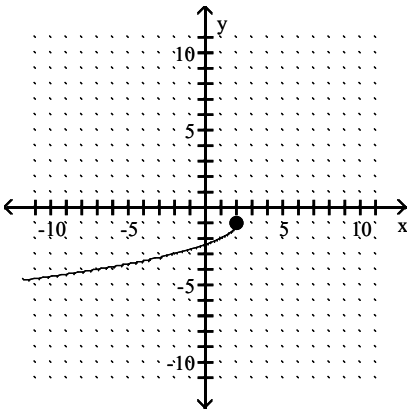


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C)

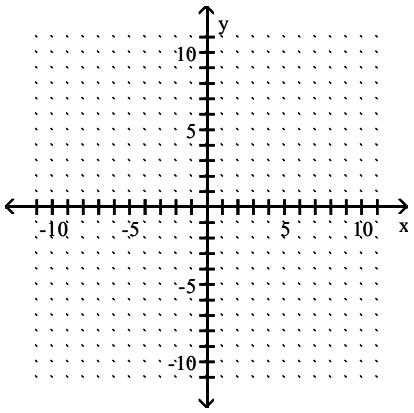


D)

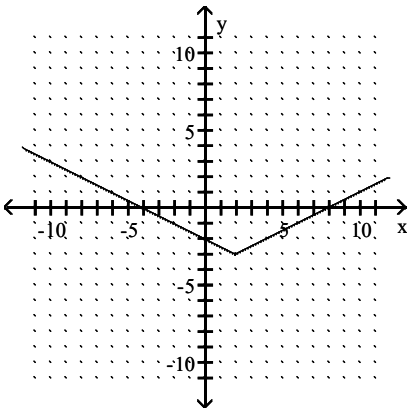


Answer: A

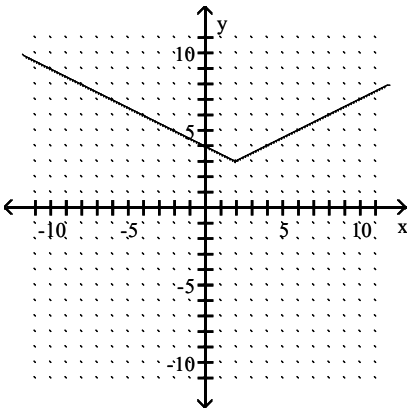
746) $g(x) = \frac{1}{2}|x - 2| - 3$



A)

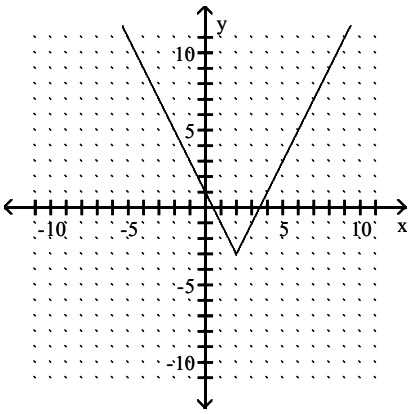


B)

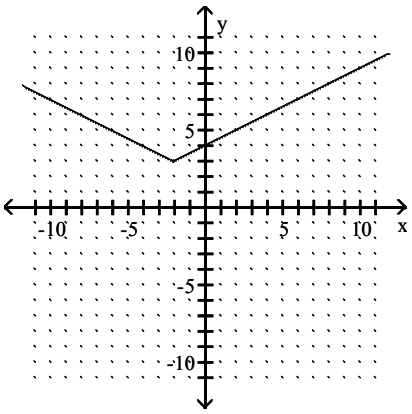


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C)

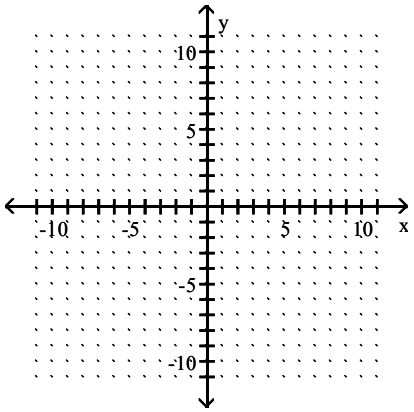


D)

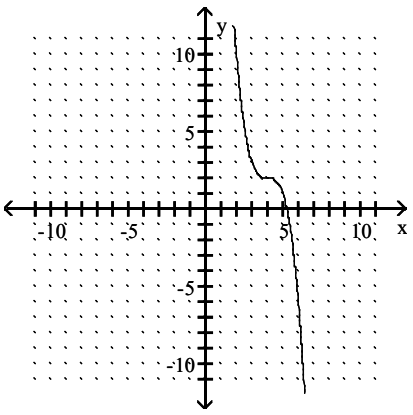


Answer: A

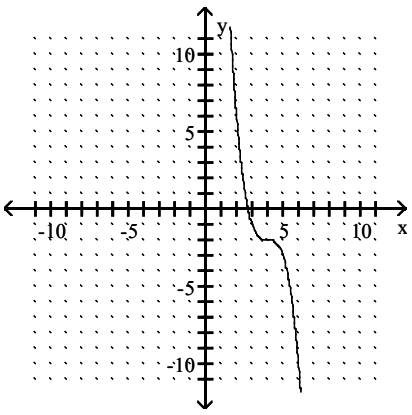
747) $g(x) = -(x - 4)^3 + 2$



A)

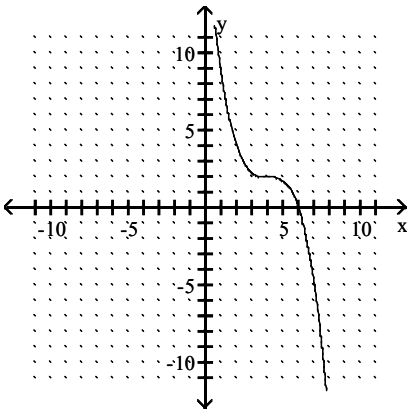


B)

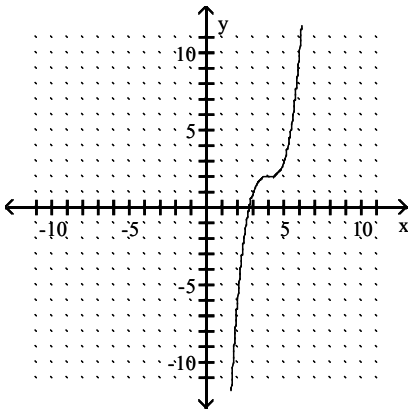


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C)



D)



Answer: A

Suppose the point (2, 4) is on the graph of y = f(x). Find a point on the graph of the given function.

748) y = f(x + 2)

A) (4, 4) B) (2, 6) C) (0, 4) D) (2, 2)

Answer: C

749) y = f(x) + 8

A) (−6, 4) B) (10, 4) C) (2, −8) D) (2, 12)

Answer: D

750) y = 2f(x)

A) (5, 1) B) (1, 4) C) (2, 8) D) (4, 4)

Answer: C

751) The reflection of the graph of y = f(x) across the x−axis

A) (−2, −4) B) (−2, 4) C) (2, −4) D) (2, 4)

Answer: C

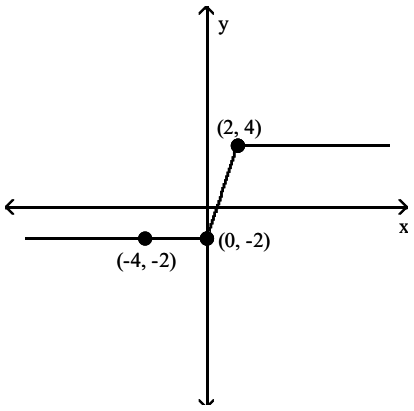
752) The reflection of the graph of y = f(x) across the y−axis

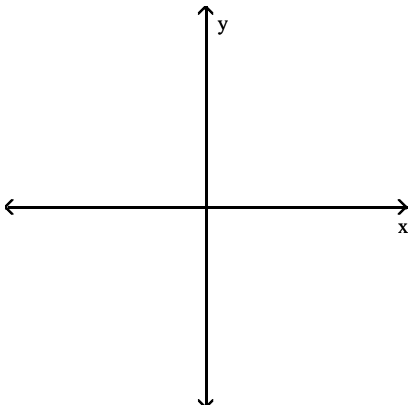
A) (2, −4) B) (−2, 4) C) (2, 4) D) (−2, −4)

Answer: B

The figure below shows the graph of a function y = f(x). Use this graph to solve the problem.

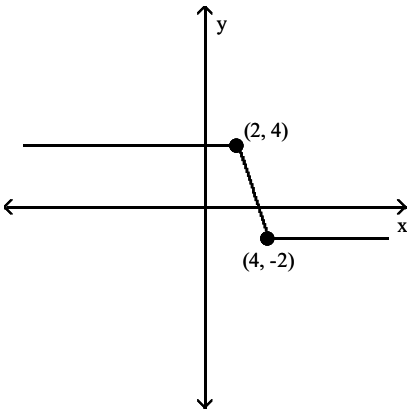
753) Sketch the graph of y = −f(x).



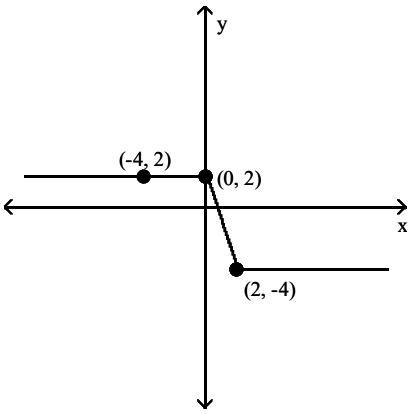


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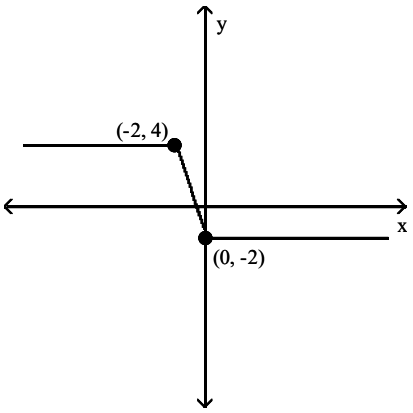
A)



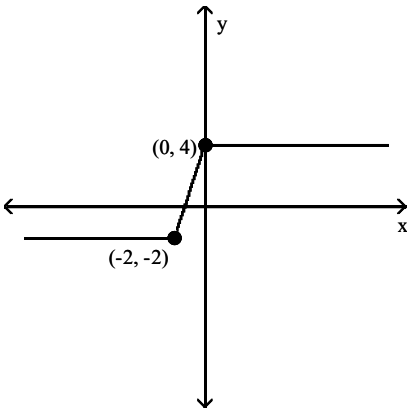
B)



C)

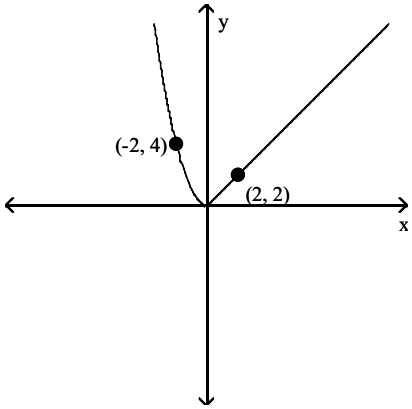


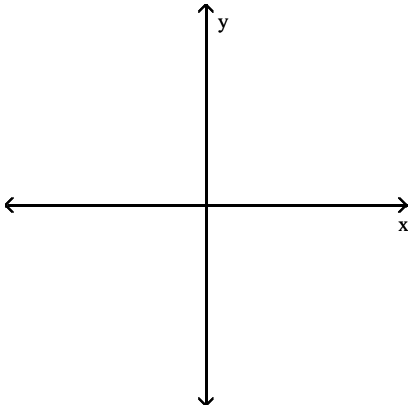
D)



Answer: B

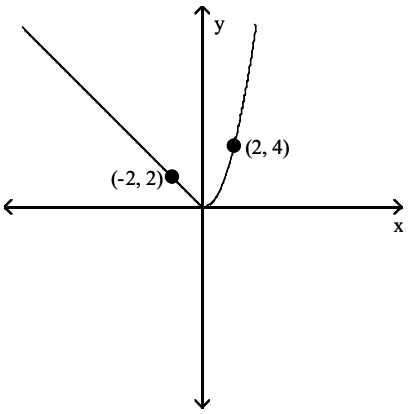
754) Sketch the graph of y = f(−x).



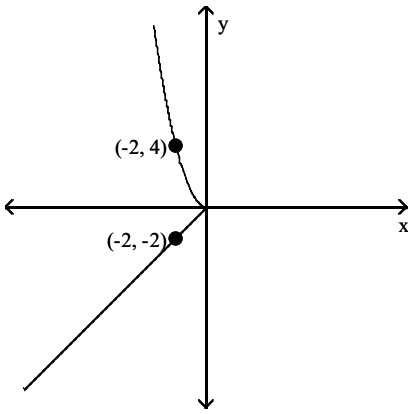


Access Complete Test Bank for Trigonometry 12th Lial

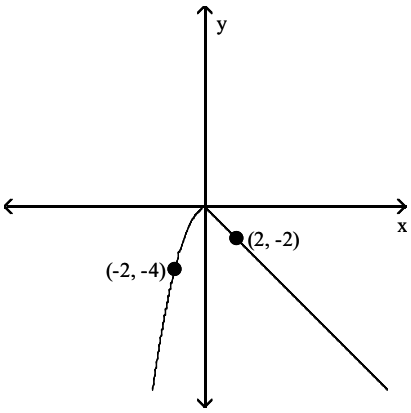
A)



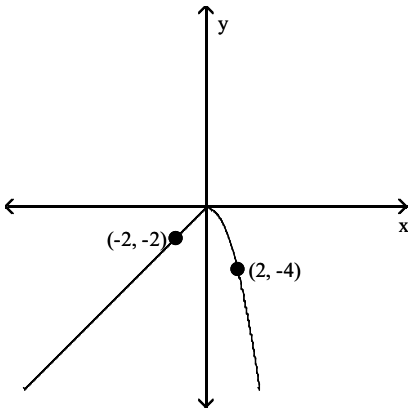
B)



C)

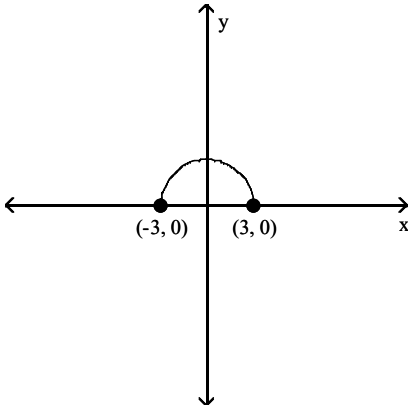


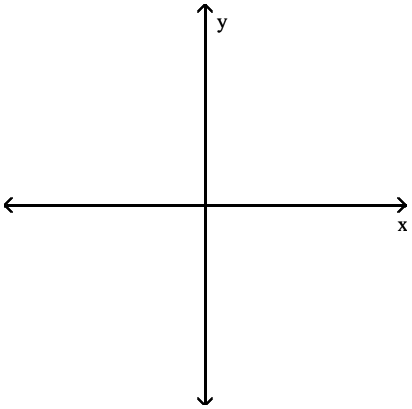
D)



Answer: A

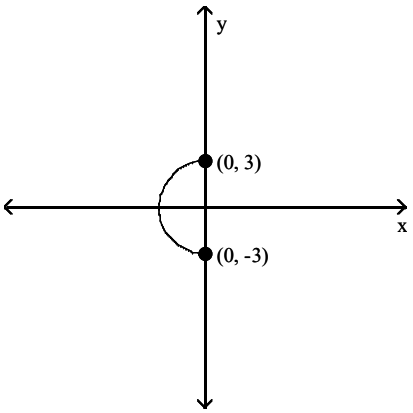
755) Sketch the graph of y = f(–x).



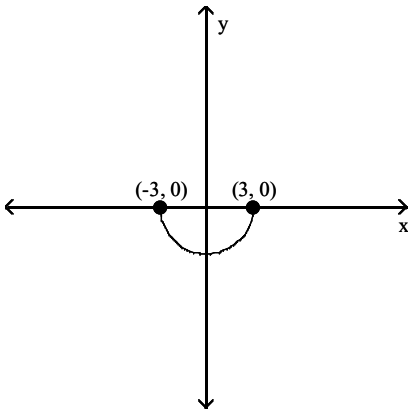


Access Complete Test Bank for Trigonometry 12th Lial

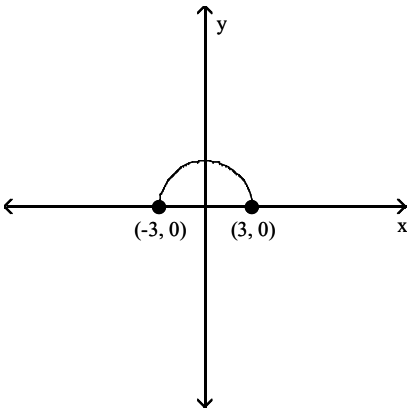
A)



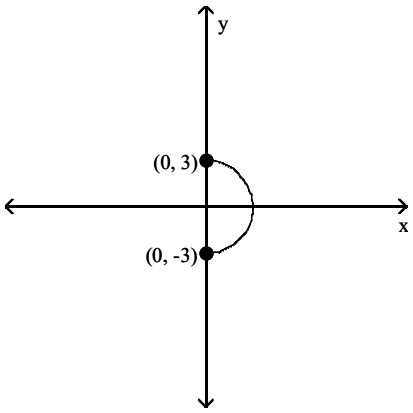
B)



C)

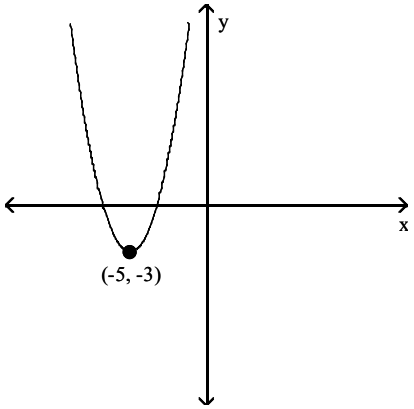


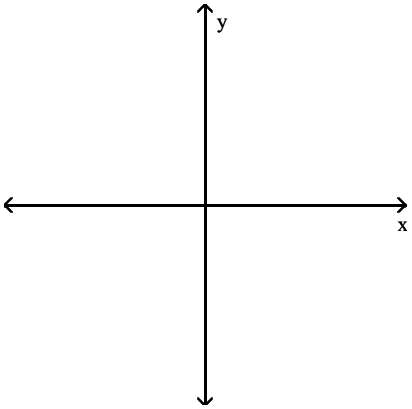
D)



Answer: C

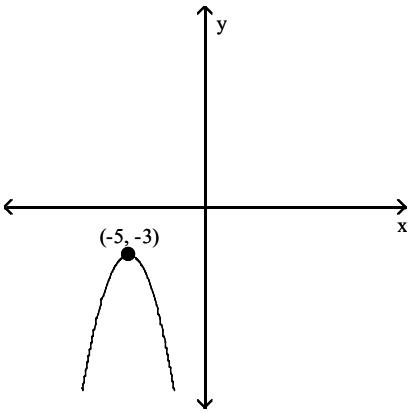
756) Sketch the graph of y = –f(x).



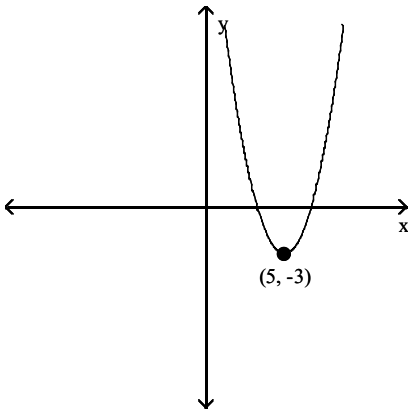


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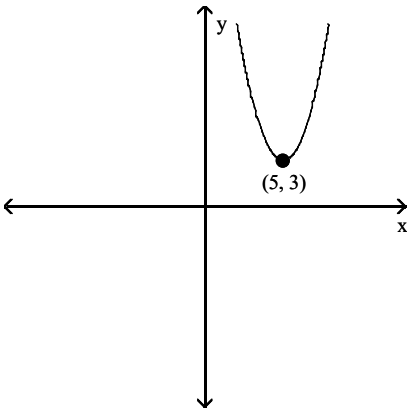
A)



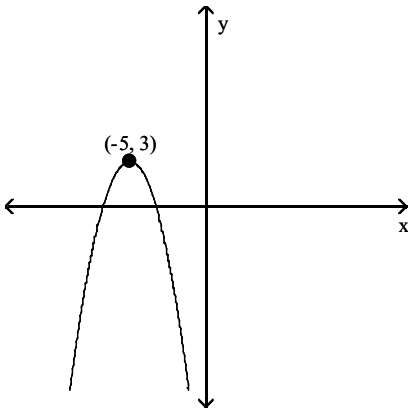
B)



C)

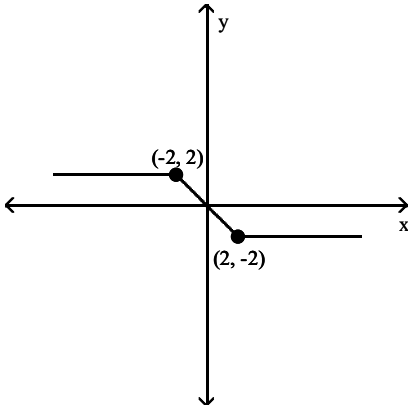


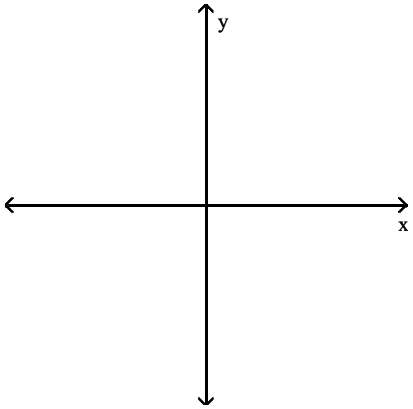
D)



Answer: D

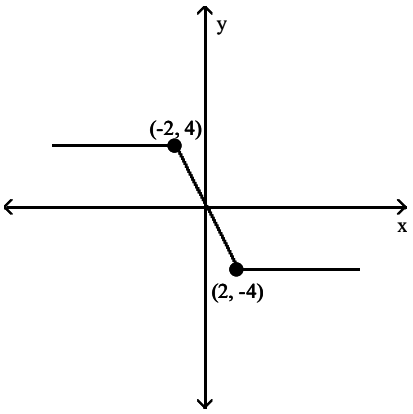
757) Sketch the graph of y = 2f(x).



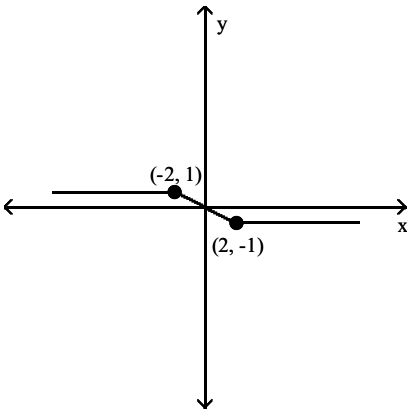


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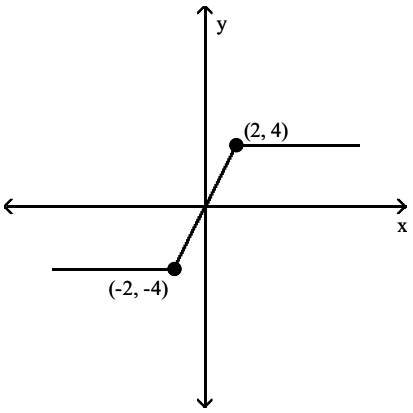
A)



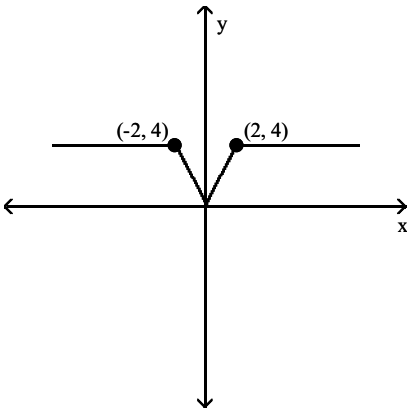
B)



C)

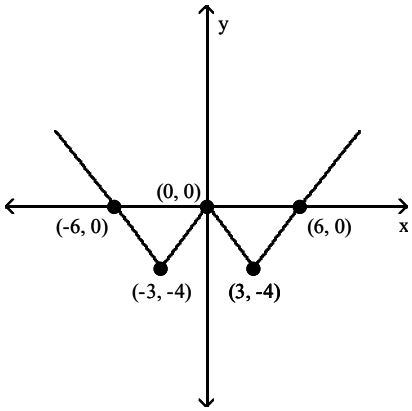


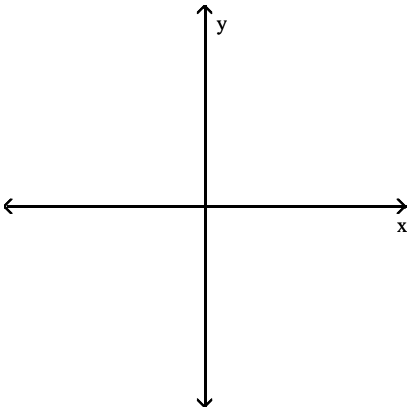
D)



Answer: A

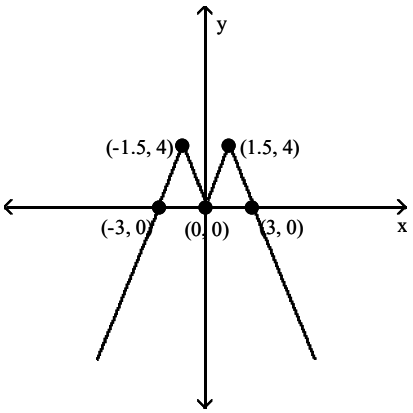
758) Sketch the graph of $y = -\frac{1}{2}f(x)$.



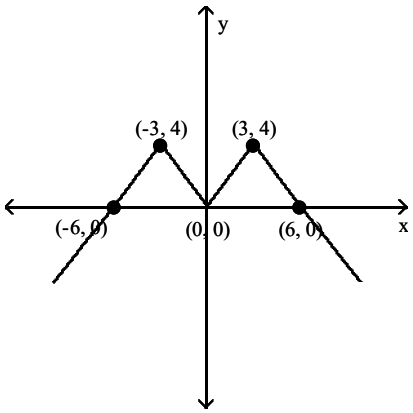


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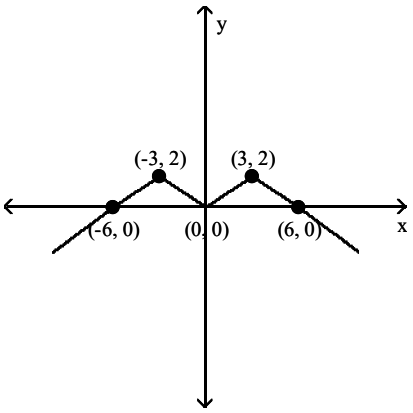
A)



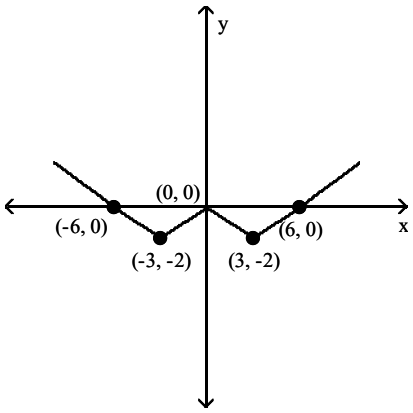
B)



C)

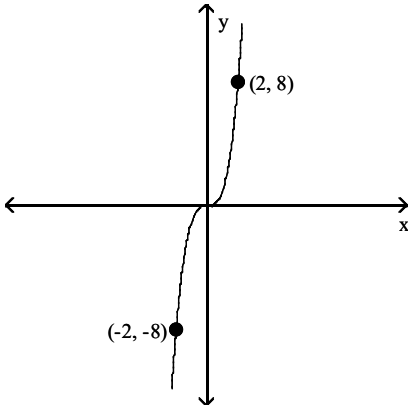


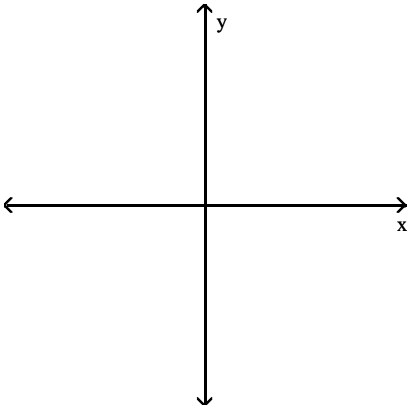
D)



Answer: C

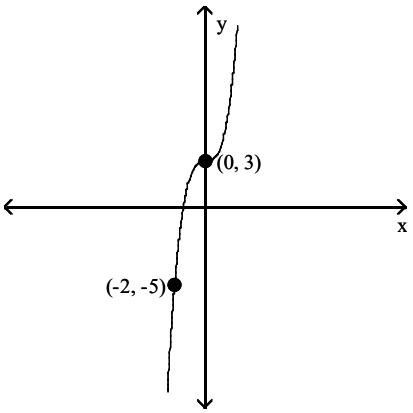
759) Sketch the graph of y = f(x – 3).



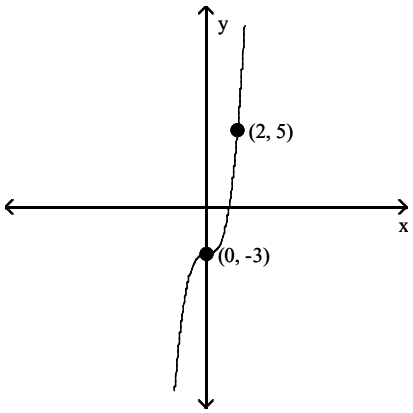


Access Complete Test Bank for Trigonometry 12th Lial

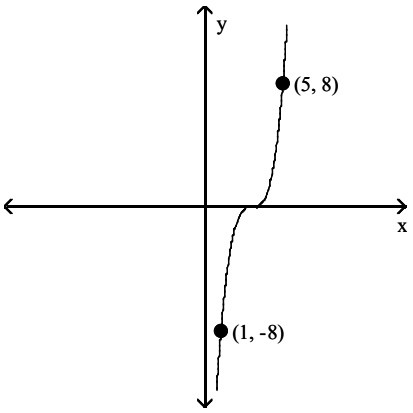
A)



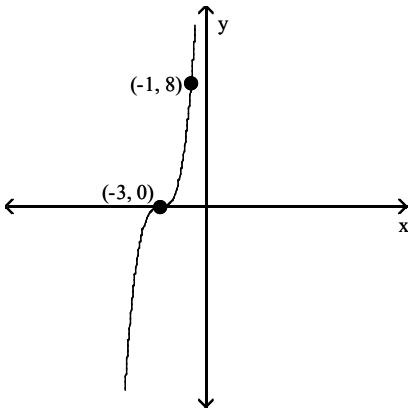
B)



C)



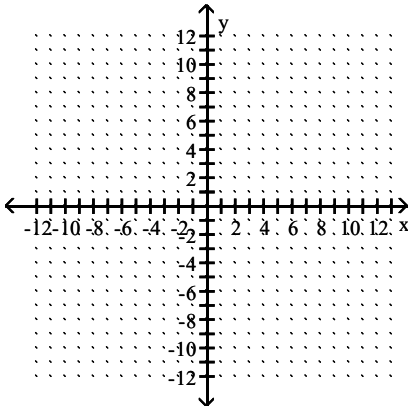
D)



Answer: C

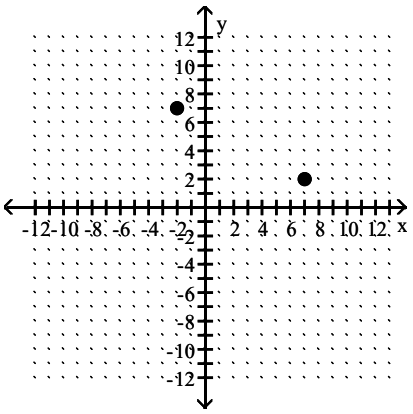
Graph the point symmetric to the given point.

760) Plot the point (7, 2), then plot the point that is symmetric to (7, 2) with respect to the x–axis.

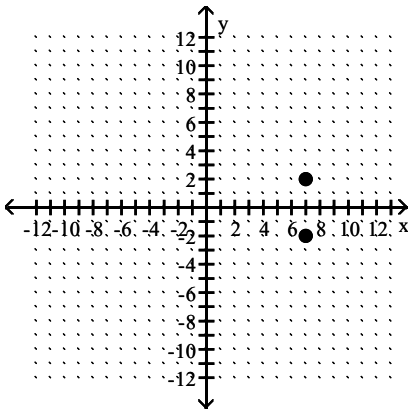


Access Complete Test Bank for Trigonometry 12th Lial

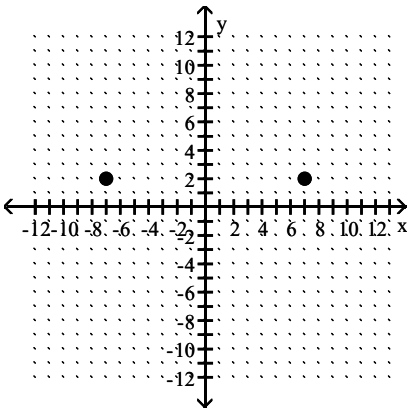
A)



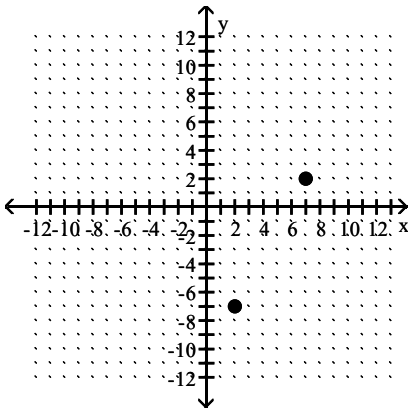
B)



C)

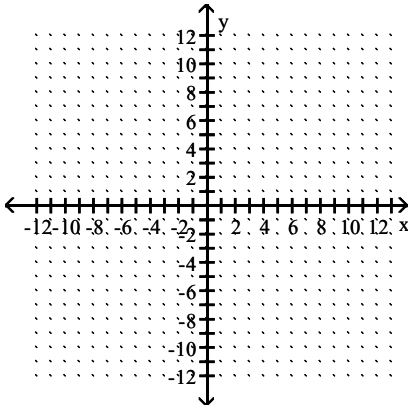


D)



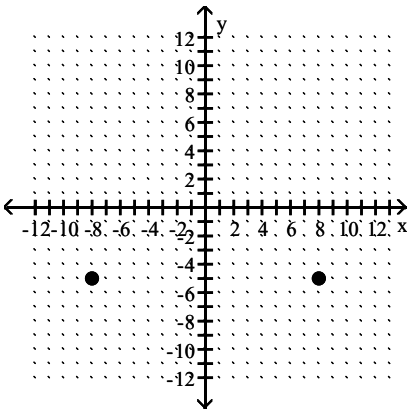
Answer: B

761) Plot the point (–8, –5), then plot the point that is symmetric to (–8, –5) with respect to the x–axis.

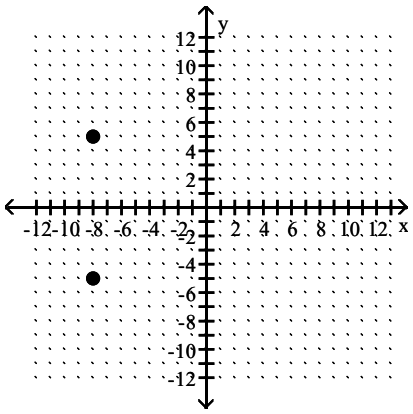


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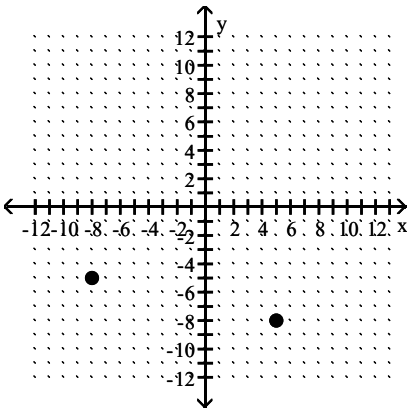
A)



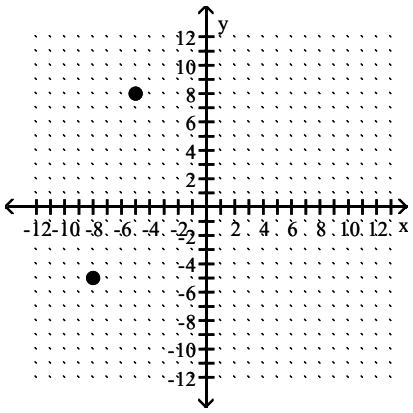
B)



C)

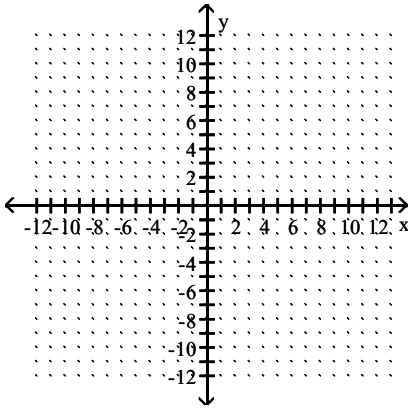


D)



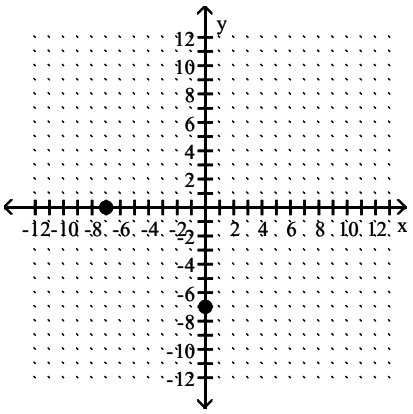
Answer: B

762) Plot the point (–7, 0), then plot the point that is symmetric to (–7, 0) with respect to the x–axis.

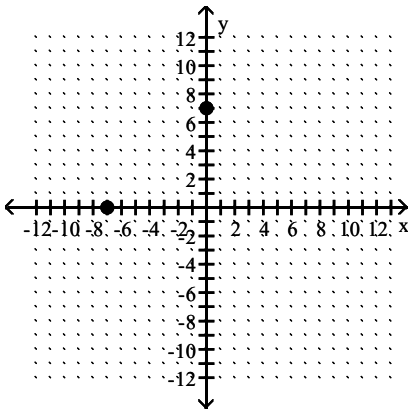


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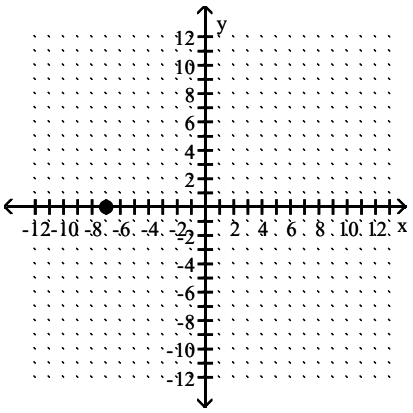
A)



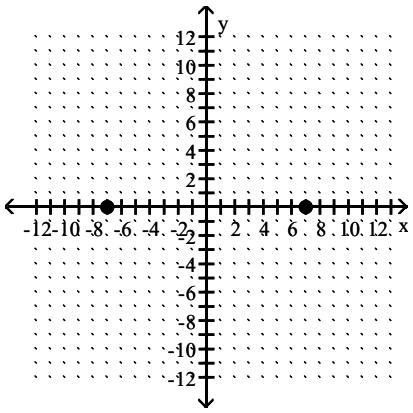
B)



C)

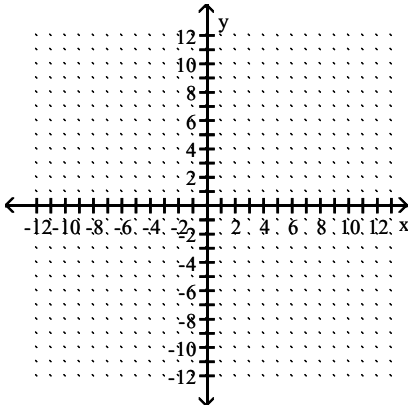


D)



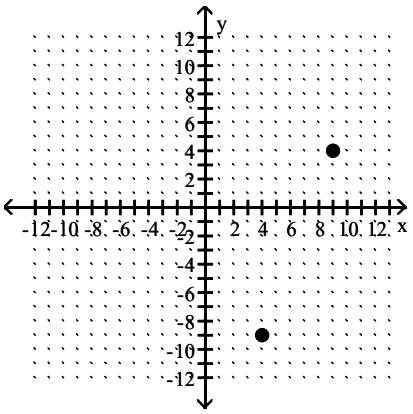
Answer: C

763) Plot the point (9, 4), then plot the point that is symmetric to (9, 4) with respect to the y–axis.

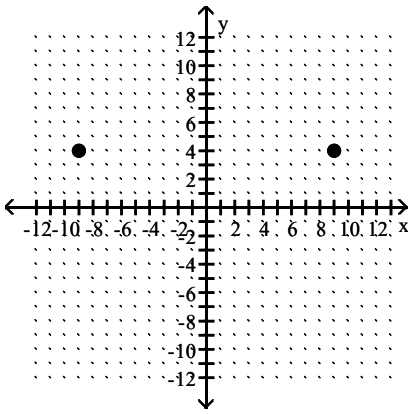


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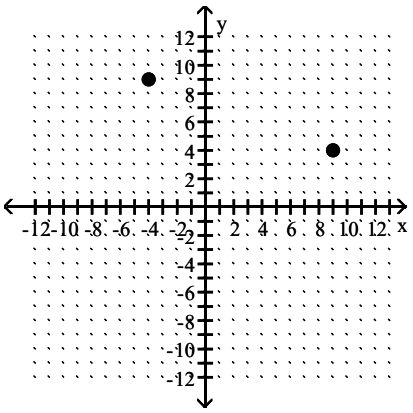
A)



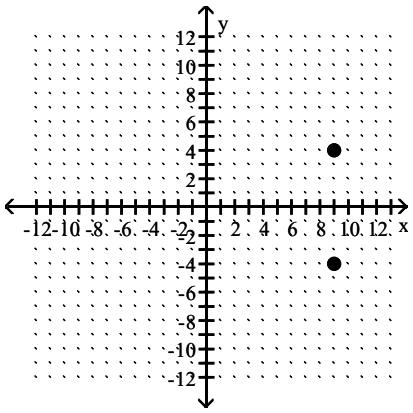
B)



C)

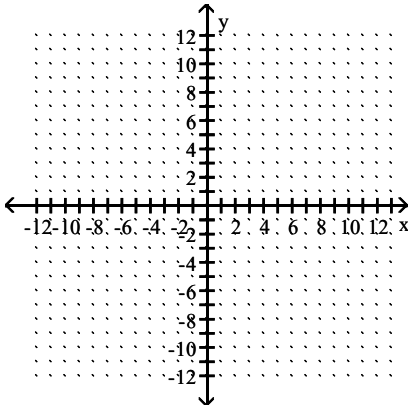


D)



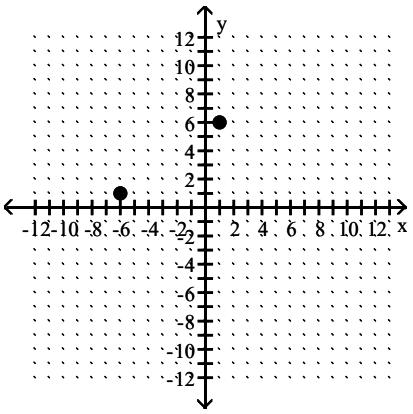
Answer: B

764) Plot the point (–6, 1), then plot the point that is symmetric to (–6, 1) with respect to the y–axis.

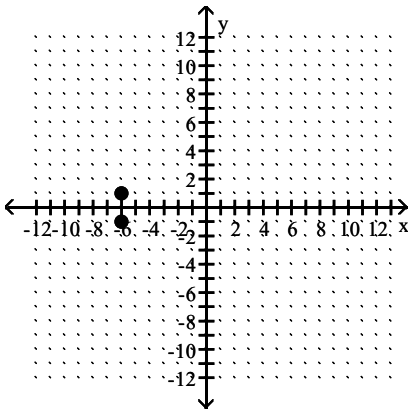


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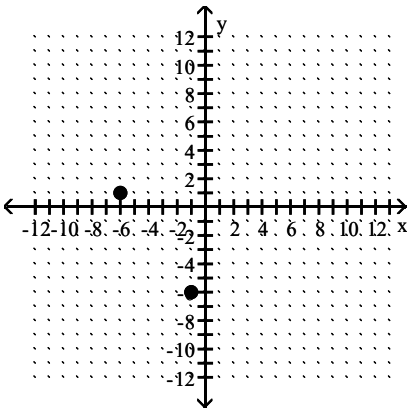
A)



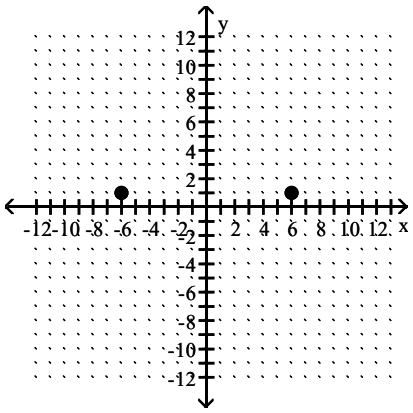
B)



C)

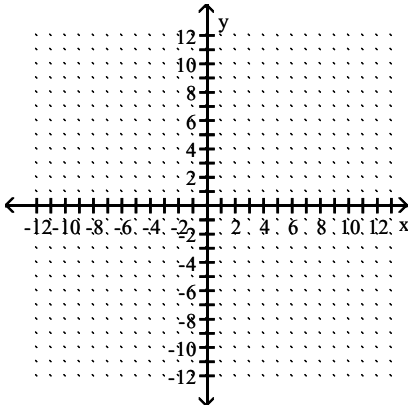


D)



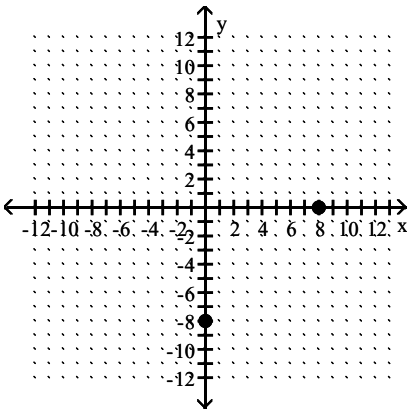
Answer: D

765) Plot the point (8, 0), then plot the point that is symmetric to (8, 0) with respect to the y–axis.

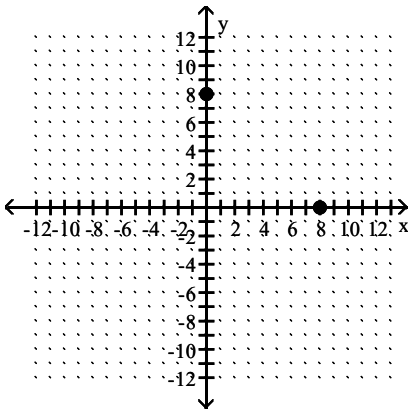


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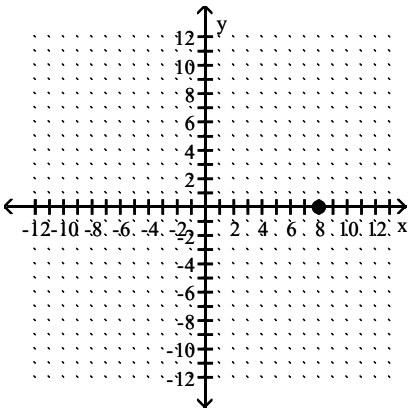
A)



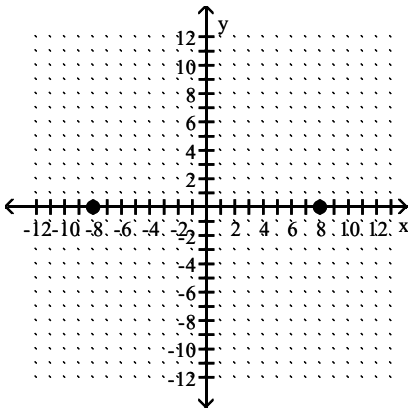
B)



C)

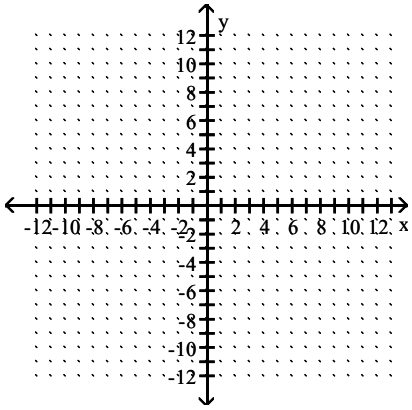


D)



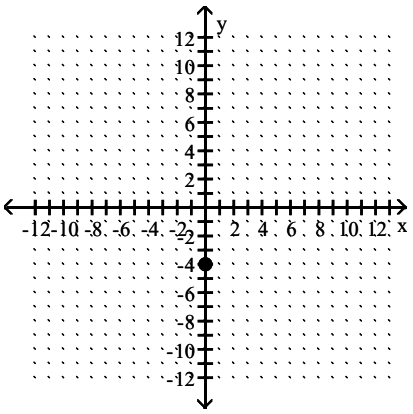
Answer: D

766) Plot the point (0, –4), then plot the point that is symmetric to (0, –4) with respect to the y–axis.

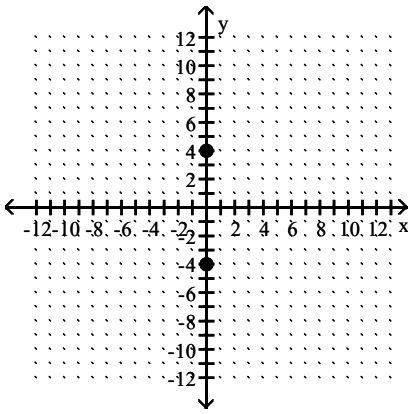


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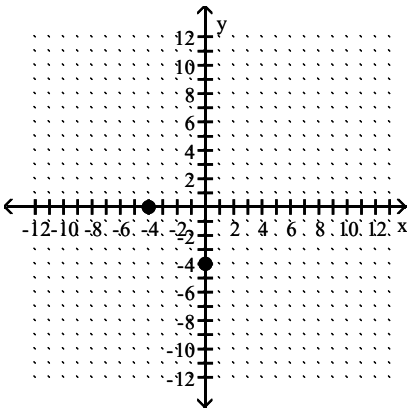
A)



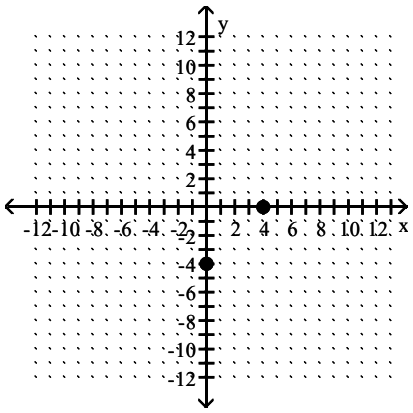
B)



C)

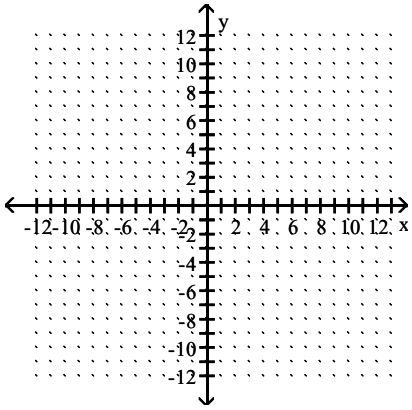


D)



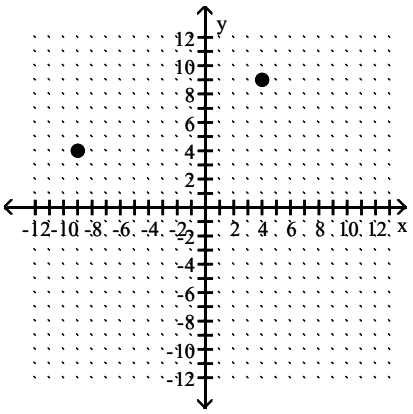
Answer: A

767) Plot the point (4, 9), then plot the point that is symmetric to (4, 9) with respect to the origin.

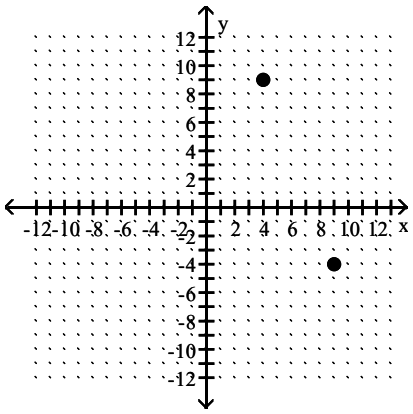


Access Complete Test Bank for Trigonometry 12th Lial

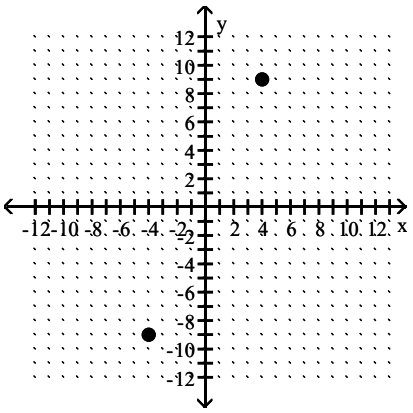
A)



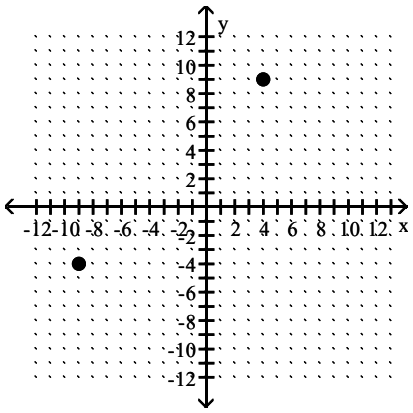
B)



C)

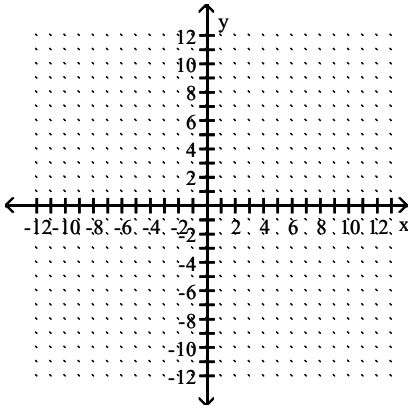


D)



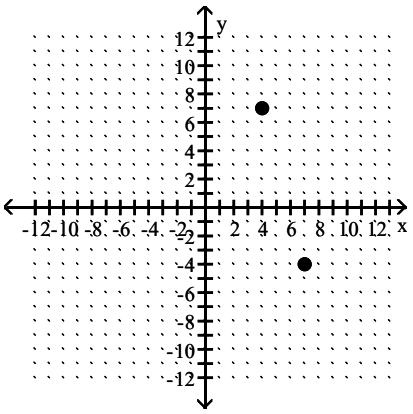
Answer: C

768) Plot the point (7, –4), then plot the point that is symmetric to (7, –4) with respect to the origin.

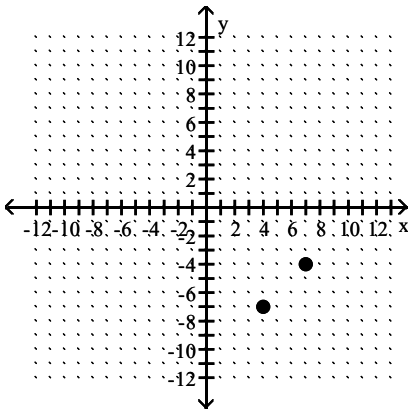


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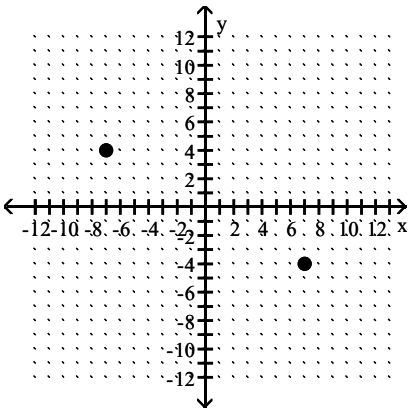
A)



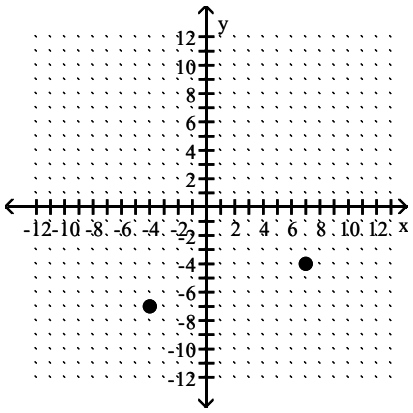
B)



C)

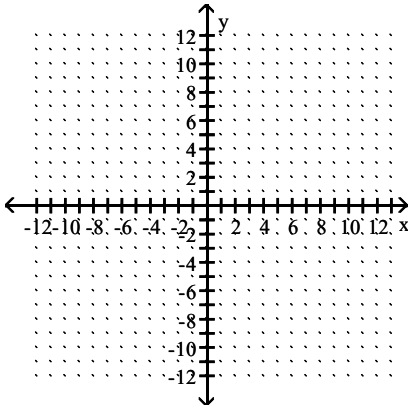


D)



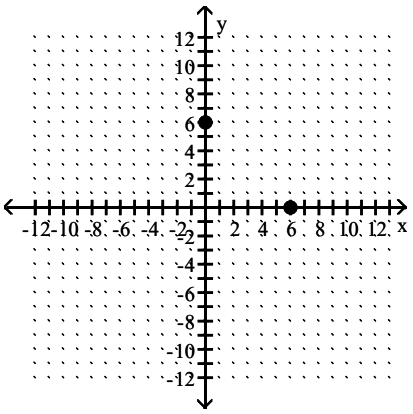
Answer: C

769) Plot the point (6, 0), then plot the point that is symmetric to (6, 0) with respect to the origin.

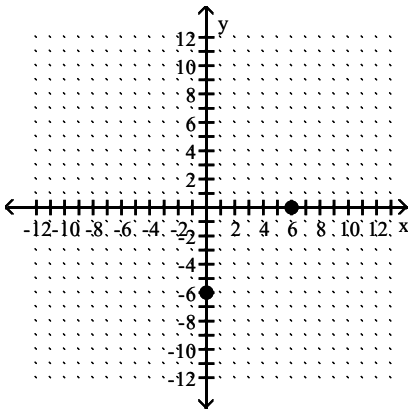


Access Complete Test Bank for Trigonometry 12th Lial

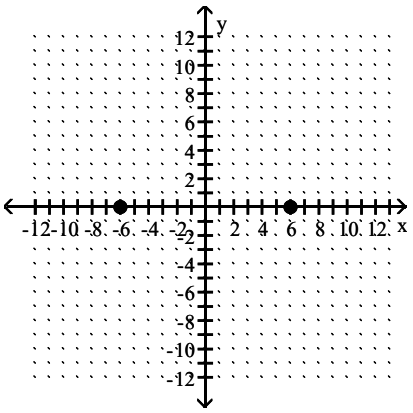
A)



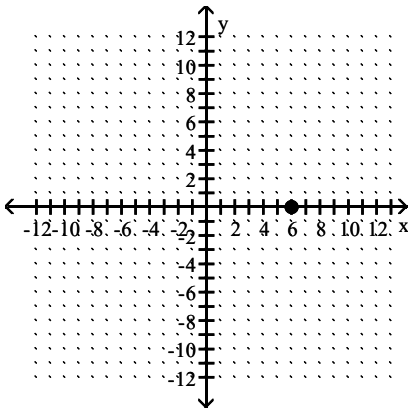
B)



C)



D)



Answer: C

Determine whether the equation has a graph that is symmetric with respect to the y–axis, the x–axis, the origin, or none of these.

770) $y = 4x^2 + 3$

A) origin only
B) y–axis only
C) x–axis only
D) x–axis, y–axis, origin

Answer: B

771) $y = (x - 8)(x + 6)$

A) x–axis, y–axis, origin
B) x–axis only
C) y–axis only
D) none of these

Answer: D

772) $y = -7x^3 + 7x$

A) origin only
B) x–axis, y–axis, origin
C) x–axis only
D) y–axis only

Answer: A

773) $y = -5x^5 + 9x^3$

A) none of these
B) x–axis, y–axis, origin
C) y–axis only
D) origin only

Answer: D

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774) $x^2 - y^2 = 6$

A) x–axis, y–axis
B) x–axis, y–axis, origin
C) origin only
D) y–axis, origin

Answer: B

775) $y = 0.97x^4 + x^2 + 5$

A) origin only
B) y–axis only
C) none of these
D) x–axis only

Answer: B

776) $y = -2x^4 + 8x + 5$

A) origin only
B) x–axis only
C) y–axis only
D) none of these

Answer: D

Determine if the function is even, odd, or neither.

777) $f(x) = 2x^2 + 5$

A) Neither
B) Odd
C) Even

Answer: C

778) $f(x) = x^4 - 3x^2 + 1$

A) Neither
B) Odd
C) Even

Answer: C

779) $f(x) = -7x^3 + 3x$

A) Even
B) Neither
C) Odd

Answer: C

780) $f(x) = -2x^5 + 2x^3$

A) Neither
B) Odd
C) Even

Answer: B

781) $f(x) = 7x^4 - 7x - 8$

A) Even
B) Neither
C) Odd

Answer: B

782) $f(x) = 8x^3 - 2x^2 - 5$

A) Odd
B) Even
C) Neither

Answer: C

783) $f(x) = 0.75x^2 + |x| + 2$

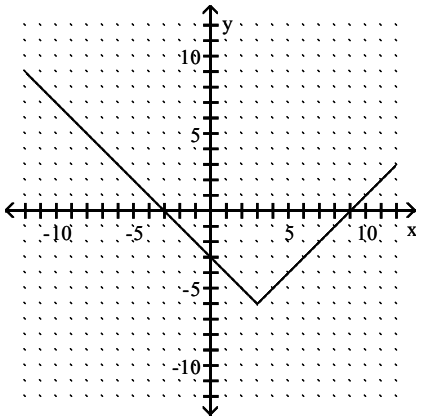
A) Neither
B) Odd
C) Even

Answer: C

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Describe the transformations and give the equation for the graph.

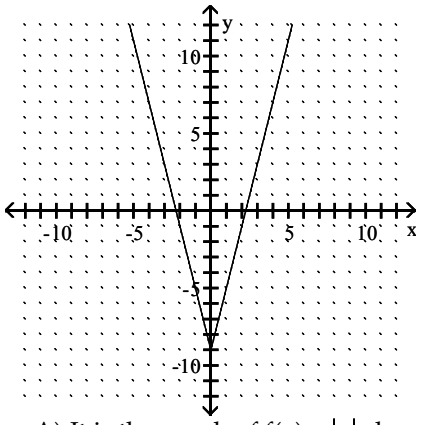
784)



A) It is the graph of f(x) = |x| translated 3 units to the right and 6 units down. The equation is y = | x − 3 | − 6
B) It is the graph of f(x) = |x| translated 3 units to the right and 6 units down. The equation is y = | x − 3 | + 6
C) It is the graph of f(x) = |x| translated 3 units to the right and 6 units down. The equation is y = | x + 3 | + 6
D) It is the graph of f(x) = |x| translated 3 units to the right and 6 units down. The equation is y = | x + 3 | − 6

Answer: A

785)

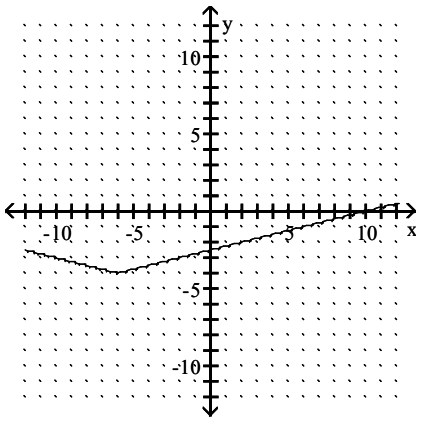


A) It is the graph of f(x) = |x| shrunken vertically by a factor of 4 and translated 9 units down. The equation is y = $\frac{1}{4}$|x| − 9
B) It is the graph of f(x) = |x| stretched vertically by a factor of 4 and translated 9 units down. The equation is y = 4|x| − 9
C) It is the graph of f(x) = |x| shrunken vertically by a factor of 4 and translated 9 units down. The equation is y = 4|x| + 9
D) It is the graph of f(x) = |x| stretched vertically by a factor of 4 and translated 9 units down. The equation is y = $\frac{1}{4}$|x| + 9

Answer: B

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786)



A) It is the graph of $f(x) = |x|$ translated 6 units to the left, shrunken vertically by a factor of $\frac{1}{4}$ and translated 4 units down. The equation is $y = \frac{1}{4}|x - 6| - 4$

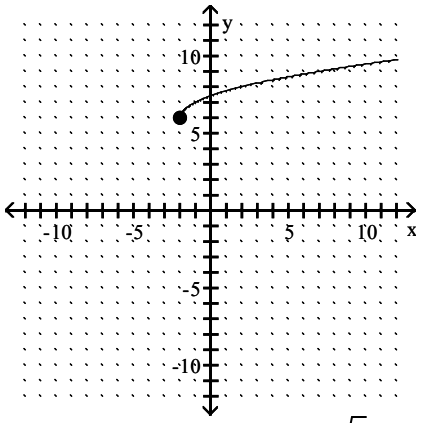
B) It is the graph of $f(x) = |x|$ translated 6 units to the left, stretched vertically by a factor of 4 and translated 4 units down. The equation is $y = 4|x - 6| + 4$

C) It is the graph of $f(x) = |x|$ translated 6 units to the left, shrunken vertically by a factor of $\frac{1}{4}$ and translated 4 units down. The equation is $y = \frac{1}{4}|x + 6| - 4$

D) It is the graph of $f(x) = |x|$ translated 6 units to the left, stretched vertically by a factor of 4 and translated 4 units down. The equation is $y = 4|x + 6| - 4$

Answer: C

787)



A) It is the graph of $f(x) = \sqrt{x}$ translated 2 units to the left and translated 6 units up. The equation is $y = \sqrt{x + 2} + 6$

B) It is the graph of $f(x) = \sqrt{x}$ translated 2 units to the left and translated 6 units up. The equation is $y = \sqrt{x + 2} - 6$

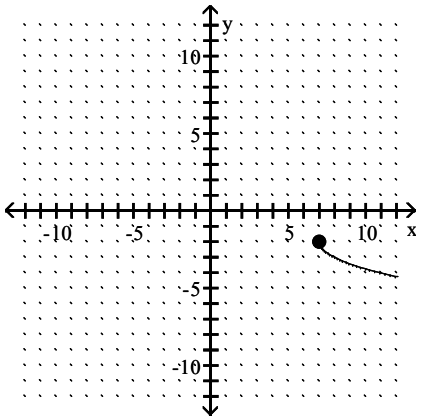
C) It is the graph of $f(x) = \sqrt{x}$ translated 2 units to the left and translated 6 units up. The equation is $y = \sqrt{x - 2} + 6$

D) It is the graph of $f(x) = \sqrt{x}$ translated 2 units to the left and translated 6 units up. The equation is $y = \sqrt{x - 2} - 6$

Answer: A

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788)



A) It is the graph of $f(x) = \sqrt{x}$ translated 7 units to the right, reflected across the x–axis and translated 2 units down. The equation is $y = -\sqrt{x - 7} - 2$

B) It is the graph of $f(x) = \sqrt{x}$ translated 7 units to the right, reflected across the x–axis and translated 2 units down. The equation is $y = \sqrt{-x + 7} - 2$

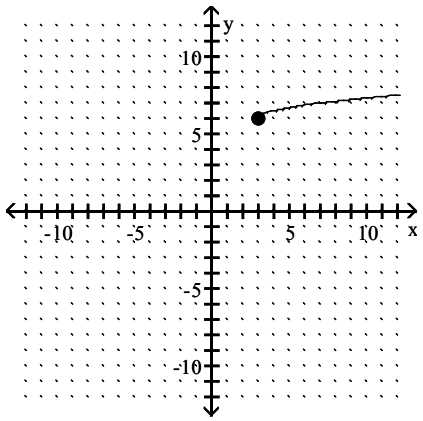
C) It is the graph of $f(x) = \sqrt{x}$ translated 7 units to the right, reflected across the y–axis and translated 2 units down. The equation is $y = \sqrt{-x - 7} - 2$

D) It is the graph of $f(x) = \sqrt{x}$ translated 7 units to the right, reflected across the x–axis and translated 2 units down. The equation is $y = -\sqrt{x + 7} - 2$

Answer: A

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789)



A) It is the graph of $f(x) = \sqrt{x}$ translated 3 units to the right, shrunken vertically by a factor of $\frac{1}{2}$ and translated 6 units up. The equation is $y = \frac{1}{2}\sqrt{x + 3} + 6$

B) It is the graph of $f(x) = \sqrt{x}$ translated 3 units to the right, stretched vertically by a factor of 2 and translated 6 units up. The equation is $y = 2\sqrt{x - 3} + 6$

C) It is the graph of $f(x) = \sqrt{x}$ translated 3 units to the right, shrunken vertically by a factor of $\frac{1}{2}$ and translated 6 units up. The equation is $y = \frac{1}{2}\sqrt{x - 3} + 6$

D) It is the graph of $f(x) = \sqrt{x}$ translated 3 units to the right, stretched vertically by a factor of 2 and translated 6 units up. The equation is $y = 2\sqrt{x + 3} + 6$

Answer: C

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1) D
2) A
3) B
4) A
5) B
6) C
7) A
8) A
9) A
10) A
11) A
12) B
13) B
14) A
15) D
16) C
17) A
18) C
19) D
20) D
21) D
22) B
23) C
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26) B
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40) A
41) D
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46) B
47) A
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49) B
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51) B
52) C
53) A
54) C
55) D
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Access Complete Test Bank for Trigonometry 12th Lial

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Access Complete Test Bank for Trigonometry 12th Lial

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780) B
781) B
782) C
783) C
784) A
785) B
786) C
787) A
788) A
789) C

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INSTRUCTOR'S TESTING MANUAL

TRIGONOMETRY

TWELFTH EDITION

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St. Charles Community College



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CHAPTER TEST FORMS

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CHAPTER 1, FORM A
TRIGONOMETRY

NAME _____
DATE _____

1. Find the complement of an angle whose measure is 8°. **1.** _____

2. Find the supplement of an angle whose measure is 36°. **2.** _____

Find the measure of each angle described below.

3. Two supplementary angles whose measures are $(10x\text{-}12)°$ and $(8x+30)°$. **3.** _____

4. Two vertical angles whose measures are $(4x\text{-}30)°$ and $(5x\text{-}70)°$ **4.** _____

5. A wheel makes 186 revolutions per minute. How many revolutions does it make per second? **5.** _____

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. 56° 54′ 8″ **6.** _____

7. 101° 31′ 1″ **7.** _____

8. 117° 29′ 50″ **8.** _____

Convert the angle to degrees, minutes, and seconds.

9. 79.02° **9.** _____

10. 135.67° **10.** _____

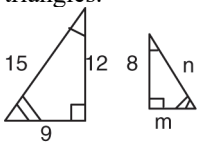
11. 59.18° **11.** _____

12. Find the angle of smallest possible positive measure coterminal with –230°. **12.** _____

13. Find the angle of smallest possible positive measure coterminal with –197°. **13.** _____

14. One angle of a triangle has measure 23° 40′ and another angle has measure 41° 19′. Find the measure of the third angle. **14.** _____

15. Find the values of m and n in the pair of similar triangles. **15.** m: _____
n: _____



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16. A tree casts a shadow of 15 feet at the same time that a yardstick casts a shadow of 15 inches. How tall is the tree?

16. _____

Find the values of the indicated trigonometric functions for the angle θ in standard position having the given point on its terminal side.

17. $(-4, 3)$

17. $\sin\theta$: _____
$\cos\theta$: _____
$\tan\theta$: _____

18. $(-4, 3)$

18. $\csc\theta$: _____
$\sec\theta$: _____
$\cot\theta$: _____

Evaluate each of the following.

19. $\tan 180° + \cos 180° - 4 \sin 270°$

19. _____

20. $(\csc 90°)(\sin 180°) + \sec^2 180°$

20. _____

21. $\sin^2 49° + \cos^2 49°$

21. _____

22. Find $\tan\alpha$ and $\sec\alpha$, given the following:
$\sin\alpha = \frac{3}{5}$ and $\cos\alpha < 0$.

22. $\tan\alpha$: _____
$\sec\alpha$: _____

Decide whether each statement is *possible* or *impossible.*

23. $\cos A = \frac{2}{\sqrt{2}}$

23. _____

24. $\cot\theta = 0.459$

24. _____

25. If θ is a quadrantal angle, then what are the possible values of $\sin\theta$?

25. _____

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CHAPTER 1, FORM B
TRIGONOMETRY

NAME _____
DATE _____

1. Find the complement of an angle whose measure is 60°. **1.** _____

2. Find the supplement of an angle whose measure is 114°. **2.** _____

Find the measure of each angle described below.

3. Two complementary angles whose measures are $(8x+7)°$ and $(6x+13)°$. **3.** _____

4. Two vertical angles whose measures are $(5x+2)°$ and $(6x-3)°$ **4.** _____

5. A wheel makes 192 revolutions per minute. How many revolutions does it make per second? **5.** _____

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. 31° 8′ 17″ **6.** _____

7. 132° 58′ 22″ **7.** _____

8. 310° 28′ 24″ **8.** _____

Convert the angle to degrees, minutes, and seconds.

9. 209.64° **9.** _____

10. 216.27° **10.** _____

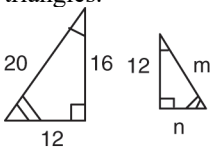
11. 59.09° **11.** _____

12. Find the angle of smallest possible positive measure coterminal with 435°. **12.** _____

13. Find the angle of smallest possible positive measure coterminal with –98°. **13.** _____

14. One angle of a triangle has measure 36° 30′, and another angle has measure 61° 20′. Find the measure of the third angle. **14.** _____

15. Find the values of m and n in the pair of similar triangles. **15.** m: _____
n: _____



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16. A triangular floor has sides 33 ft, 42 ft, and 61 ft long. A scale drawing is made in which the smallest side is 3 in. long. What are the lengths of the other two sides in the drawing, to the nearest hundredth of an in.?

16. _____

Find the values of the indicated trigonometric functions for the angle θ in standard position having the given point on its terminal side.

17. (6, –8)

17. $\sin\theta$: _____
$\cos\theta$: _____
$\tan\theta$: _____

18. (–3, –5)

18. $\csc\theta$: _____
$\sec\theta$: _____
$\cot\theta$: _____

Evaluate each of the following.

19. $3 \sin 90° + 2 \cos 180° + 5 \tan 0°$

19. _____

20. $\csc^2 90° + (\sin 90°)(\cos 180°)$

20. _____

21. $\sin^2 57° + \cos^2 57°$

21. _____

22. Find $\sin\alpha$ and $\cos\alpha$, given the following:
$\tan\alpha = \frac{2}{5}$ and $\sec\alpha < 0$.

22. $\sin\alpha$: _____
$\cos\alpha$: _____

Decide whether each statement is *possible* or *impossible*.

23. $\sin B = \frac{\sqrt{2}}{2}$

23. _____

24. $\csc\theta = -7.249$

24. _____

25. If θ is a quadrantal angle, then what are the possible values of $\cos\theta$?

25. _____

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CHAPTER 1, FORM C
TRIGONOMETRY

NAME _____
DATE _____

1. Find the complement of an angle whose measure is 18°. **1.** _____

2. Find the supplement of an angle whose measure is 60°. **2.** _____

Find the measure of each angle described below.

3. Two supplementary angles whose measures are $(5x+100)°$ and $(13x+8)°$. **3.** _____

4. Two angles that form a right angle whose measures are $(10x-14)°$ and $3x°$ **4.** _____

5. A wheel makes 216 revolutions per minute. How many revolutions does it make per second? **5.** _____

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. $20° 54'$ **6.** _____

7. $38° 42' 1''$ **7.** _____

8. $5° 34' 16''$ **8.** _____

Convert the angle to degrees, minutes, and seconds.

9. 89.04° **9.** _____

10. 92.45° **10.** _____

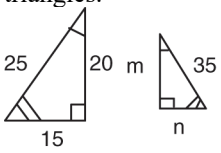
11. 178.60° **11.** _____

12. Find the angle of smallest possible positive measure coterminal with $-415°$. **12.** _____

13. Find the angle of smallest possible positive measure coterminal with $-203°$. **13.** _____

14. One angle of a triangle has measure $38° 18'$, and another angle has measure $62° 14'$. Find the measure of the third angle. **14.** _____

15. Find the values of m and n in the pair of similar triangles. **15.** m: _____
n: _____



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16. A 90-foot-tall building casts a shadow of 22 ft at the same time that a tree casts a shadow of 8 ft. To the nearest tenth of a foot, how tall is the tree?

16. _____

Find the values of the indicated trigonometric functions for the angle θ in standard position having the given point on its terminal side.

17. (6, 3)

17. $\sin\theta$: _____
$\cos\theta$: _____
$\tan\theta$: _____

18. (–2, 4)

18. $\csc\theta$: _____
$\sec\theta$: _____
$\cot\theta$: _____

Evaluate each of the following.

19. $\sec^2 180° - \frac{1}{2}\sin 90° + 4\tan 360°$

19. _____

20. $8 \sin 180° - 3 \csc 270° + 4 \cos 180°$

20. _____

21. $5\cos^2 18° + 5\sin^2 18°$

21. _____

22. Find $\sin\alpha$ and $\cos\alpha$, given the following:
$\tan\alpha = \frac{7}{3}$ and $\sec\alpha < 0$.

22. $\sin\alpha$: _____
$\cos\alpha$: _____

Decide whether each statement is *possible* or *impossible*.

23. $\cos A - \sin B = 1.1$

23. _____

24. $\cot\theta = -17.05$

24. _____

25. If θ is a quadrantal angle, then what are the possible values of $\cot\theta$?

25. _____

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CHAPTER 1, FORM D
TRIGONOMETRY

NAME _____
DATE _____

1. Find the complement of an angle whose measure is 89°. **1.** _____

2. Find the supplement of an angle whose measure is 18°. **2.** _____

Find the measure of each angle described below.

3. Two complementary angles whose measures are $(9x-3)°$ and $(5x-5)°$. **3.** _____

4. Two vertical angles whose measures are $(3x+20)°$ and $(5x+12)°$ **4.** _____

5. A wheel makes 426 revolutions per minute. How many revolutions does it make per second? **5.** _____

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. 34° 51′ 35″ **6.** _____

7. 165° 51′ 9″ **7.** _____

8. 184° 38′ 39″ **8.** _____

Convert the angle to degrees, minutes, and seconds.

9. 122.69° **9.** _____

10. 105.14° **10.** _____

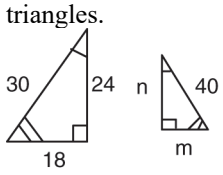
11. 33.91° **11.** _____

12. Find the angle of smallest possible positive measure coterminal with 699°. **12.** _____

13. Find the angle of smallest possible positive measure coterminal with 735°. **13.** _____

14. One angle of a right triangle has measure 43° 39′. Find the measure of the other acute angle. **14.** _____

15. Find the values of m and n in the pair of similar triangles. **15.** m: _____
n: _____



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16. A flag pole casts a shadow of 8 ft at the same time that a yardstick casts a shadow of 6 in. How tall is the pole?

16. _____

Find the values of the indicated trigonometric functions for the angle θ in standard position having the given point on its terminal side.

17. (–8, 15)

17. $\sin\theta$: _____
$\cos\theta$: _____
$\tan\theta$: _____

18. (5, 3)

18. $\csc\theta$: _____
$\sec\theta$: _____
$\cot\theta$: _____

Evaluate each of the following.

19. $\sin^2 270° + 3\tan 180° - 5\cos 180°$

19. _____

20. $\sec^2 180° - 4(\sin 90°)(\cos 180°)$

20. _____

21. $.5\sin^2 52° + .5\cos^2 52°$

21. _____

22. Find $\tan\alpha$ and $\sec\alpha$, given the following:
$\cos\alpha = \frac{3}{5}$ and $\sin\ \alpha\ > 0$.

22. $\tan\alpha$: _____
$\sec\alpha$: _____

Decide whether each statement is *possible* or *impossible*.

23. $\sin^2 C = 1.98$

23. _____

24. $\sec\theta = -0.45$

24. _____

25. If θ is a quadrantal angle, then what are the possible values of $\csc\theta$.

25. _____

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CHAPTER 1, FORM E
TRIGONOMETRY

NAME_____
DATE _____

Choose the best answer.

1. Find the complement of an angle whose measure is 56°. **1.** _____

a. 34° **b.** 124°
c. 144° **d.** 304°

2. Find the supplement of an angle whose measure is 53°. **2.** _____

a. 37° **b.** 47°
c. 127° **d.** 143°

For 3-4, find the measure of each angle described.

3. Two angles that form a right angle whose measures are $(10x+18)^\circ$ and $(5x+12)^\circ$ **3.** _____

a. 48°,42° **b.** 148°,32°
c. 58°,32° **d.** 86°,4°

4. Two vertical angles whose measures are $(6x-20)^\circ$ and $(3x+40)^\circ$ **4.** _____

a. 135°,45° **b.** 20°,20°
c. 45°,45° **d.** 100°,100°

5. A wheel makes 1314 revolutions per minute. How many revolutions does it make per second? **5.** _____

a. 8.7 **b.** 12.1
c. 21.9 **d.** 26.8

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. 56° 13′ 52″ **6.** _____

a. 56.23° **b.** 66.23°
c. 76.23° **d.** 86.23°

7. 153° 31′ 18″ **7.** _____

a. 125.43° **b.** 153.52°
c. 167.52° **d.** 189.53°

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8. $376° 23′ 4″$ **8.** _____

a. 376.38° **b.** 16.38°
c. 376.42° **d.** 106.38°

9. Give an expression that generates all angles coterminal with 270°. Let n represent an integer. **9.** _____

a. $90° + n \cdot 360°$ **b.** $270° + n \cdot 360°$
c. $90° + n \cdot 180°$ **d.** $270° + n \cdot 180°$

10. Find the measures of two supplementary angles with measures $(3z - 10)°$ and $(2z)°$. **10.** _____

a. 94°, 86° **b.** 50°, 40°
c. 104°, 76° **d.** 108°, 72°

11. Convert 161.40° to degrees, minutes and seconds. **11.** _____

a. $29° 34′ 10″$ **b.** $161° 24′ 00″$
c. $29° 24′ 00″$ **d.** $161° 34′ 10″$

12. Find the angle of smallest possible positive measure coterminal with –210°. **12.** _____

a. 30° **b.** 120°
c. 150° **d.** 60°

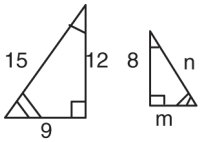
13. Convert 70.12° to degrees, minutes and seconds. **13.** _____

a. $70° 07′12″$ **b.** $70° 06′50″$
c. $70° 12′07″$ **d.** $70° 12′36″$

14. One angle of a triangle has measure $40° 20′$ and another angle has measure $20° 35′$. Find the measure of the third angle. **14.** _____

a. $29° 05′$ **b.** $119° 05′$
c. $113° 15′$ **d.** $98° 55′$

15. Find the values of m and n in the pair of similar triangles. **15.** _____



a. $m = 3, n = 4$ **b.** $m = 6, n = 10$
c. $m = 5, n = 4$ **d.** $m = 5, n = 8$

16. A water tower casts a shadow of 36 ft at the same time that a 12-in. ruler casts a shadow of 3 in. How tall is the water tower? **16.** _____

a. 144 ft **b.** 96 ft
c. 248 ft **d.** 384 ft

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17. Find the values of $\sin\theta$, $\cos\theta$, and $\tan\theta$ for the angle θ in standard position having $(-4, -3)$ on its terminal side. **17.** _____

a. $\sin\theta = -\frac{3}{5}, \cos\theta = -\frac{4}{5}, \tan\theta = \frac{3}{4}$

b. $\sin\theta = \frac{4}{5}, \cos\theta = -\frac{3}{5}, \tan\theta = \frac{4}{3}$

c. $\sin\theta = -\frac{3}{5}, \cos\theta = \frac{4}{5}, \tan\theta = \frac{3}{4}$

d. $\sin\theta = \frac{4}{5}, \cos\theta = \frac{3}{5}, \tan\theta = -\frac{3}{4}$

18. Find the values of $\csc\theta$, $\sec\theta$, and $\cot\theta$ for the angle θ in the standard position having $(4, -2)$ on its terminal side. **18.** _____

a. $\csc\theta = -\frac{2}{\sqrt{5}}, \sec\theta = \frac{2}{\sqrt{5}}, \cot\theta = -\frac{1}{2}$

b. $\csc\theta = -2\sqrt{5}, \sec\theta = \sqrt{5}, \cot\theta = \frac{1}{2}$

c. $\csc\theta = \sqrt{5}, \sec\theta = \frac{2}{\sqrt{5}}, \cot\theta = -2$

d. $\csc\theta = -\sqrt{5}, \sec\theta = \frac{\sqrt{5}}{2}, \cot\theta = -2$

Evaluate each of the following.

19. $4 \sin 90° + 2 \cos 270° + 3 \tan 0°$ **19.** _____

a. 6 **b.** 4
c. -4 **d.** -3

20. $\csc^2 90° + (\sin 270°)(\tan 180°)$ **20.** _____

a. 0 **b.** 2
c. 1 **d.** -1

21. $\sin^2 47° + \cos^2 47°$ **21.** _____

a. 1 **b.** 1.41
c. -1 **d.** 0

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22. Find $\sin\alpha$ and $\cos\alpha$, given the following: **22.** _____

$\tan\alpha = \frac{3}{5}$ and $\sec\alpha < 0$.

a. $\sin\alpha = -\frac{3\sqrt{34}}{34}, \cos\alpha = -\frac{5\sqrt{34}}{34}$

b. $\sin\alpha = \frac{3\sqrt{34}}{34}, \cos\alpha = \frac{5\sqrt{34}}{34}$

c. $\sin\alpha = -\frac{3\sqrt{34}}{34}, \cos\alpha = \frac{5\sqrt{34}}{34}$

d. $\sin\alpha = \frac{3\sqrt{34}}{34}, \cos\alpha = -\frac{5\sqrt{34}}{34}$

23. Determine which of the following is possible. **23.** _____

a. $\sec A = -\frac{3}{5}$ **b.** $\csc B = \frac{1}{2}$

c. $\cos C = \frac{1}{\sqrt{3}}$ **d.** $\sin D = \frac{\sqrt{10}}{3}$

24. Determine which of the following is *not* possible. **24.** _____

a. cot 90° **b.** sin 45°

c. tan 90° **d.** sec 180°

25. List the possible values of $\sin\theta$ if θ is a quadrantal angle. **25.** _____

a. –1, –2, 1, 2 **b.** 0

c. –1, 1 **d.** –1, 0, 1

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CHAPTER 1, FORM F
TRIGONOMETRY

NAME _____
DATE _____

Choose the best answer.

1. Find the complement of an angle whose measure is 12°. **1.** _____

a. 60° **b.** 78°
c. 90° **d.** 168°

2. Find the supplement of an angle whose measure is 24°. **2.** _____

a. 66° **b.** 90°
c. 156° **d.** 336°

For 3-4, find the measure of each angle described.

3. Two angles that form a right angle whose measures are $(7x-19)^\circ$ and $(9x-3)^\circ$ **3.** _____

a. 60°,30° **b.** 83°,7°
c. 120°,60° **d.** 46°,44°

4. Two vertical angles whose measures are $(5x+9)^\circ$ and $(2x+21)^\circ$ **4.** _____

a. 4°,4° **b.** 4°,86°
c. 29°,29° **d.** 50°,50°

5. A wheel makes 726 revolutions per minute. How many revolutions does it make per second? **5.** _____

a. 4.2 **b.** 12.1
c. 16.8 **d.** 24.6

Convert the angle to decimal degrees and round to the nearest hundredth of a degree.

6. $15^\circ\ 24'\ 18''$ **6.** _____

a. 15.31° **b.** 15.45°
c. 15.70° **d.** 15.41°

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7. $25° 25′ 37″$ **7.** _____

a. 25.43° **b.** 27.90°
c. 31.72° **d.** 43.67°

8. $123° 35′ 48″$ **8.** _____

a. 123.60° **b.** 47.33°
c. 132.67° **d.** 123.33°

9. Give an expression that generates all angles coterminal with 45°. Let n represent an integer. **9.** _____

a. $45° + n \cdot 360°$ **b.** $90° + n \cdot 360°$
c. $45° + n \cdot 180°$ **d.** $90° + n \cdot 180°$

10. Find the measures of two complementary angles with measures $(10w + 15)°$ and $(5w)°$. **10.** _____

a. 125°, 55° **b.** 65°, 25°
c. 15°, 85° **d.** 20°, 70°

11. Convert 15.36° to degrees, minutes, and seconds. **11.** _____

a. $15° 20′26″$ **b.** $15° 36′00″$
c. $15° 12′30″$ **d.** $15° 21′36″$

12. Convert 275.10° to degrees, minutes, and seconds. **12.** _____

a. $275° 06′ 00″$ **b.** $275° 02′ 06″$
c. $75° 06′ 02″$ **d.** $270° 02′ 06″$

13. Find the angle of smallest possible positive measure coterminal with –140°. **13.** _____

a. 40° **b.** 220°
c. 80° **d.** 260°

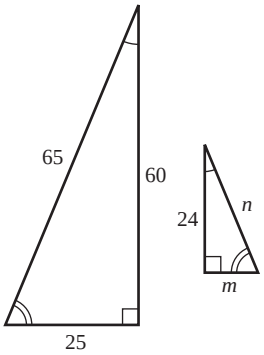
14. One angle of a triangle has measure $21° 37′$ and another angle has measure $38° 42′$. Find the measure of the third angle. **14.** _____

a. $119° 41′$ **b.** $120° 41′$
c. $113° 21′$ **d.** $106° 59′$

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15. Find the values of m and n in the pair of similar triangles. **15.** _____



a. $m = 12, n = 12$ **b.** $m = 9, n = 36$
c. $m = 10, n = 26$ **d.** $m = 27, n = 15$

16. A radio antenna casts a shadow of 90 ft at the same time that a yard-long stick casts a shadow of 27 in. How tall is the radio antenna? **16.** _____

a. 108 ft **b.** 120 ft
c. 136 ft **d.** 240 ft

17. Find the values of $\sin\theta$, $\cos\theta$, and $\tan\theta$ for the angle θ in the standard position having (–5, 12) on its terminal side. **17.** _____

a. $\sin\theta = \frac{12}{13}, \cos\theta = -\frac{5}{13}, \tan\theta = -\frac{12}{5}$

b. $\sin\theta = -\frac{12}{13}, \cos\theta = -\frac{5}{13}, \tan\theta = \frac{5}{12}$

c. $\sin\theta = \frac{5}{13}, \cos\theta = -\frac{12}{13}, \tan\theta = -\frac{5}{12}$

d. $\sin\theta = -\frac{12}{13}, \cos\theta = -\frac{5}{13}, \tan\theta = -\frac{5}{12}$

18. Find the values of $\csc\theta$, $\sec\theta$, and $\cot\theta$ for the angle θ in the standard position having (3, –6) on its terminal side. **18.** _____

a. $\csc\theta = \frac{\sqrt{5}}{2}, \sec = \frac{\sqrt{5}}{2}, \cot\theta = \frac{1}{2}$

b. $\csc\theta = -2\sqrt{5}, \sec\theta = \sqrt{5}, \cot\theta = \frac{1}{2}$

c. $\csc\theta = \frac{2}{\sqrt{5}}, \sec\theta = \frac{1}{\sqrt{5}}, \cot\theta = -2$

d. $\csc\theta = -\frac{\sqrt{5}}{2}, \sec\theta = \sqrt{5}, \cot\theta = -\frac{1}{2}$

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Evaluate each of the following.

19. $3 \sin 180° + 2 \cos 90° - 6 \tan 0°$ **19.** _____

a. 1 **b.** –3
c. 2 **d.** 0

20. $4\cot^2 90° + (\sec 180°)(2\cos 180°)$ **20.** _____

a. 4 **b.** 2
c. 0 **d.** –2

21. $3\sec 180° - 5\tan 360°$ **21.** _____

a. 3 **b.** 1
c. 0 **d.** –3

22. Find $\sin\beta$ and $\cos\beta$, given the following: **22.** _____

$\tan\beta = -\frac{2}{5}$ and $\csc\beta > 0$.

a. $\sin\beta = \frac{2\sqrt{29}}{29}, \cos\beta = -\frac{5\sqrt{29}}{29}$

b. $\sin\beta = -\frac{5\sqrt{29}}{29}, \cos\beta = -\frac{2\sqrt{29}}{29}$

c. $\sin\beta = -\frac{2\sqrt{29}}{29}, \cos\beta = -\frac{5\sqrt{29}}{29}$

d. $\sin\beta = \frac{5\sqrt{29}}{29}, \cos\beta = -\frac{2\sqrt{29}}{29}$

23. Determine which of the following is possible. **23.** _____

a. $\cos\alpha = -\frac{5}{4}$ **b.** $\sin\beta = -\frac{1}{2}$

c. $\tan 270°$ **d.** $\csc\theta = \frac{1}{3}$

24. Determine which of the following is *not* possible. **24.** _____

a. $\csc 270°$ **b.** $\sin 135°$
c. $\cos 210°$ **d.** $\cot 180°$

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25. List the possible values of $\cos\theta$ if θ is a quadrantal angle. **25.** _____

a. –1, 0, 1 **b.** –2, –1, 1, 2
c. 0 **d.** –1, 1

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ANSWERS

TO

CHAPTER TEST FORMS

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CHAPTER 1, FORM C

1. 72°
2. 120°
3. 120°,60°
4. 66°,24°
5. 3.6 revolutions
6. 20.90°
7. 38.70°
8. 5.57°
9. 89° 2′ 24″
10. ..
11. 178° 36′
12. 157°
13. 305°
14. 79° 28′
15. $m = 28$; $n = 21$
16. 32.7 ft
17. $\sin\theta = \frac{\sqrt{5}}{5}; \cos\theta = \frac{2\sqrt{5}}{5}; \tan\theta = \frac{1}{2}$
18. $\csc\theta = \frac{\sqrt{5}}{2}; \sec\theta = -\sqrt{5}; \cot\theta = -\frac{1}{2}$
19. $\frac{1}{2}$
20. –1
21. 5
22. $\sin\alpha = -\frac{7\sqrt{58}}{58}$; $\cos\alpha = -\frac{3\sqrt{58}}{58}$
23. Impossible
24. Possible
25. 0 or undefined.

CHAPTER 1, FORM D

1. 1°
2. 162°
3. 60°,30°
4. 32°,32°
5. 7.1 revolutions
6. 34.86°
7. 165.85°
8. 184.64°
9. 122° 41′ 24″
10. 105° 8′ 24″
11. 33° 54′ 36″
12. 15°
13. 339°
14. 46° 21′
15. $m = 24$; $n = 32$
16. 48 ft
17. $\sin\theta = \frac{15}{17}; \cos\theta = -\frac{8}{17}; \tan\theta = -\frac{15}{8}$
18. $\csc\theta = \frac{\sqrt{34}}{3}; \sec\theta = \frac{\sqrt{34}}{5}; \cot\theta = \frac{5}{3}$
19. 6
20. 5
21. .5
22. $\tan\alpha = \frac{4}{3}; \sec\alpha = \frac{5}{3}$
23. Impossible
24. Impossible
25. 1, –1 or undefined

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CHAPTER 1, FORM E

1. a
2. c
3. c
4. d
5. c
6. a
7. b
8. a
9. b
10. c
11. b
12. c
13. a
14. b
15. b
16. a
17. a
18. d
19. b
20. c
21. a
22. a
23. c
24. c
25. d

CHAPTER 1, FORM F

1. b
2. c
3. a
4. c
5. b
6. d
7. a
8. a
9. a
10. b
11. d
12. a
13. b
14. a
15. c
16. b
17. a
18. d
19. d
20. b
21. d
22. a
23. b
24. d
25. a

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