Test Bank for Algebra and Trigonometry Enhanced with Graphing Utilities 8th Sullivan

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

Use U = universal set = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}, A = {1, 2, 3, 5, 8}, B = {2, 3, 5, 7}, and C = {1, 4, 9} to find the set.

1) $B \cup C$

A) { } B) {1, 2, 3, 5, 7, 9} C) {0} D) {1, 2, 3, 4, 5, 7, 9}

Answer: D

2) $A \cup C$

A) {1} B) {1, 2, 3, 4, 5, 8, 9} C) {4, 6, 7, 9} D) {1, 2, 3, 5, 7, 9}

Answer: B

3) $A \cap B$

A) {1, 2, 3, 5, 8} B) {2, 3, 5} C) {1, 2, 3, 5, 7, 8} D) {2, 3, 5, 7}

Answer: B

4) $A \cap C$

A) {1} B) {4, 6, 7, 9}

C) {1, 2, 3, 4, 5, 7, 8, 9} D) {1, 2, 3, 5, 7, 9}

Answer: A

5) $(A \cap B) \cup C$

A) {2, 3, 5} B) {1, 2, 3, 5} C) {1, 2, 3} D) {1, 2, 3, 4, 5, 9}

Answer: D

6) $(B \cup C) \cap A$

A) { } B) {1, 2, 3, 5} C) {1, 2, 3, 4, 5, 7, 9} D) {1, 2, 3}

Answer: B

7) $\overline{B}$

A) {0, 1, 4, 6, 9} B) {0, 1, 4, 6, 7, 8, 9} C) {0, 1, 4, 6, 8, 9} D) {1, 4, 6, 8, 9}

Answer: C

8) $\overline{A \cup B}$

A) {1, 4, 6, 8, 9} B) {0, 4, 6, 9} C) {1, 2, 3, 5, 7, 8} D) {4, 6, 9}

Answer: B

9) $\overline{A \cap C}$

A) {1} B) {1, 2, 3, 4, 5, 7, 8, 9}

C) {0, 2, 3, 4, 5, 6, 7, 8, 9} D) {1, 2, 3, 4, 5, 6, 7, 8, 9}

Answer: C

10) $\overline{B} \cap \overline{C}$

A) {1, 2, 3, 4, 5, 7, 9} B) {6, 8} C) {0, 6, 8} D) { }

Answer: C

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List all the elements of B that belong to the given set.

11) $B = \left\{10, \sqrt{6}, -4, 0, \frac{7}{8}, -\frac{8}{7}, 8.3\right\}$

Integers

A) {10, 0} B) {10, 0, $\sqrt{6}$} C) {10, –4, 0} D) {10, –4}

Answer: C

12) $B = \left\{4, \sqrt{6}, -23, 0, \frac{2}{3}, -\frac{3}{2}, 4.1\right\}$

Natural numbers

A) {4} B) {4, 0} C) $\left\{4, 0, -\frac{3}{2}\right\}$ D) {–23, 0, 4}

Answer: A

13) $B = \left\{4, \sqrt{5}, -13, 0, \frac{0}{6}\right\}$

Real numbers

A) $\left\{4, \sqrt{5}, -13, 0, \frac{0}{6}\right\}$ B) {4, –13, 0}

C) {4, –13} D) $\left\{4, -13, 0, \frac{0}{6}\right\}$

Answer: A

14) $B = \left\{10, \sqrt{5}, -21, 0, \frac{0}{9}, 0.43\right\}$

Rational numbers

A) $\left\{10, -21, 0, \frac{0}{9}, 0.43\right\}$ B) $\left\{\sqrt{5}, \frac{0}{9}, 0.43\right\}$

C) {$\sqrt{5}$} D) {10, 0}

Answer: A

15) $B = \left\{16, \sqrt{5}, -14, 0, \frac{0}{3}, 0.17\right\}$

Irrational numbers

A) {$\sqrt{5}$, 0.17} B) {$\sqrt{5}$} C) $\left\{\sqrt{5}, \frac{0}{3}, 0.17\right\}$ D) $\left\{\sqrt{5}, \frac{0}{3}\right\}$

Answer: B

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16) B = {13, $\sqrt{7}$, –19, 0, $\frac{7}{9}$, $-\frac{9}{7}$, 3.5, 25π, 0.257257257...}

Integers

A) {13, 0} B) {13, –19, 0} C) {13, –19} D) {13, 0, $\sqrt{7}$}

Answer: B

17) B = {3, $\sqrt{6}$, –16, 0, $\frac{1}{4}$, –4, 8.1, 6π, 0.625625625...}

Natural numbers

A) {3} B) {3, 0} C) $\{3, 0, -4\}$ D) {–16, 0, 3}

Answer: A

18) B = {8, $\sqrt{8}$, –23, 0, $\frac{0}{2}$, $\sqrt{25}$, 0.89, –8π, 0.252525...}

Rational numbers

A) $\left\{8, -23, 0, \frac{0}{2}, \sqrt{25}, 0.89, -8\pi, 0.252525...\right\}$ B) $\left\{8, -23, 0, \frac{0}{2}, \sqrt{25}, 0.89, 0.252525...\right\}$

C) $\left\{8, -23, 0, \frac{0}{2}, 0.89\right\}$ D) $\left\{8, -23, 0, \frac{0}{2}, 0.89, 0.252525...\right\}$

Answer: B

19) B = {5, $\sqrt{8}$, –15, 0, $\frac{0}{1}$, , 0.28, –8π, 0.999...}

Irrational numbers

A) {$\sqrt{8}$} B) $\left\{\sqrt{8}, \frac{0}{1}, -8\pi\right\}$ C) {$\sqrt{8}$, –8π, 0.999...} D) {$\sqrt{8}$, –8π}

Answer: D

Approximate the number rounded to three decimal places, and truncated to three decimal places.

20) 0.0797

A) 0.080
0.079

B) 0.079
0.080

C) 0.081
0.079

D) 0.080
0.080

Answer: A

21) 2.66666667

A) 2.667
2.666

B) 2.667
2.667

C) 2.668
2.666

D) 2.666
2.667

Answer: A

22) $\frac{13}{9}$

A) 1.444
1.444

B) 1.445
1.444

C) 1.445
1.445

D) 1.444
1.445

Answer: A

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Write the statement using symbols.

23) The sum of 40 and 8 is 48.

A) $40 \cdot 8 = 320$ B) $40 - 8 = 32$ C) $40 + 8 = 48$ D) $\frac{40}{8} = 5$

Answer: C

24) The difference 22 less 11 equals 11.

A) $\frac{22}{11} = 2$ B) $22 - 11 = 11$ C) $22 + 11 = 33$ D) $22 \cdot 11 = 242$

Answer: B

25) The product of 4 and 2 equals 8.

A) $4 + 2 = 6$ B) $\frac{4}{2} = 2$ C) $4 \cdot 2 = 8$ D) $4 - 2 = 2$

Answer: C

26) The quotient 28 divided by 7 is 4.

A) $28 + 7 = 35$ B) $28 \cdot 7 = 196$ C) $\frac{28}{7} = 4$ D) $28 - 7 = 21$

Answer: C

27) The sum of four times x and 5 decreased by 7 is 8.

A) $4(x + 5 - 7) = 8$ B) $7 - (4x + 5) = 8$ C) $4(x + 5) - 7 = 8$ D) $4x + 5 - 7 = 8$

Answer: D

28) Three times the difference of x and 8 is −10.

A) $3x - 8 = -10$ B) $3(x - 8) = -10$ C) $3 - x - 8 = -10$ D) $3 + x - 8 = -10$

Answer: B

29) The quotient of x and the sum of 5 and x.

A) $x(5 + x)$ B) $\frac{x + 5}{x}$ C) $\frac{x}{5 + x}$ D) $x + 5 + x$

Answer: C

Evaluate the expression.

30) $9 - 4 + 7$

A) 6 B) −2 C) 20 D) 12

Answer: D

31) $7 + \frac{2}{7}$

A) $\frac{49}{7}$ B) $\frac{51}{2}$ C) $\frac{51}{7}$ D) $\frac{49}{2}$

Answer: C

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32) $3 \cdot [5(8 - 5) - 6]$

A) –3 B) 27 C) –13 D) –9

Answer: B

33) $5 \cdot [8 + 4 \cdot (4 + 2)]$

A) 360 B) 356 C) 64 D) 160

Answer: D

34) $-5 - (-8 + 4 \cdot 1 - 6)$

A) –15 B) –7 C) 5 D) –11

Answer: C

35) $\frac{27}{72} \cdot \frac{8}{9}$

A) 1 B) $\frac{1}{3}$ C) 3 D) $\frac{3}{8}$

Answer: B

36) $\frac{3}{2} \cdot \left(\frac{3}{4} + \frac{3}{8}\right)$

A) $\frac{9}{16}$ B) $\frac{27}{8}$ C) $\frac{9}{8}$ D) $\frac{27}{16}$

Answer: D

37) $\frac{1}{4} \cdot \left(7 - \frac{1}{6}\right) + 8$

A) $\frac{49}{24}$ B) $\frac{115}{12}$ C) $\frac{89}{6}$ D) $\frac{233}{24}$

Answer: D

38) $\frac{1 + 2}{9 + 2}$

A) $\frac{3}{11}$ B) $-\frac{1}{11}$ C) $-\frac{1}{7}$ D) $\frac{3}{7}$

Answer: A

39) $\frac{8 - 3}{3 - 8}$

A) 5 B) $\frac{8}{3}$ C) –1 D) $-\frac{8}{3}$

Answer: C

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40) $\frac{1}{11} + \frac{5}{12}$

A) $\frac{67}{23}$ B) $\frac{67}{132}$ C) $\frac{1}{22}$ D) $\frac{6}{23}$

Answer: B

41) $\frac{5}{6} - \frac{1}{7}$

A) $\frac{2}{21}$ B) $\frac{29}{42}$ C) $\frac{2}{3}$ D) $\frac{29}{6}$

Answer: B

42) $\frac{\frac{1}{2}}{\frac{9}{10}}$

A) $\frac{5}{9}$ B) $\frac{9}{20}$ C) $\frac{20}{9}$ D) $\frac{9}{5}$

Answer: A

43) $\frac{1}{3} + \frac{1}{6} \cdot \frac{1}{4}$

A) $\frac{1}{8}$ B) $\frac{11}{9}$ C) $\frac{1}{36}$ D) $\frac{3}{8}$

Answer: D

Use the Distributive Property to remove the parentheses.

44) $2(x + 5)$

A) $x + 10$ B) $10x$ C) $2x + 5$ D) $2x + 10$

Answer: D

45) $2x(x + 8)$

A) $2x^2 + 16x$ B) $16x^2$ C) $2x^2 + 8$ D) $x^2 + 16x$

Answer: A

46) $6(3x + 7)$

A) $9x + 13$ B) $18x + 42$ C) $60x$ D) $18x + 7$

Answer: B

47) $2\left(\frac{3}{2}x - \frac{1}{6}\right)$

A) $\frac{3}{2}x - \frac{1}{3}$ B) $3x - \frac{1}{2}$ C) $3x - \frac{1}{3}$ D) $3x - \frac{1}{6}$

Answer: C

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48) (x + 7)(x + 8)

A) $x^2 + 14x + 56$ B) $x^2 + 56x + 15$ C) $x^2 + 15x + 56$ D) $x^2 + 15x + 15$

Answer: C

49) (x + 2)(x + 1)

A) $x^2 + 2x + 3$ B) $x^2 + 3x + 3$ C) $x^2 + 2x + 2$ D) $x^2 + 3x + 2$

Answer: D

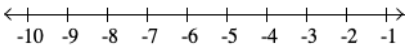
50) (x + 3)(x – 3)

A) $x^2 - 9$ B) $x^2 - 6$ C) $x^2 + 6x - 9$ D) $x^2 - 6x - 9$

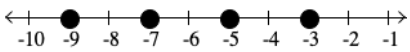
Answer: A

On the real number line, label the points with the given coordinates.

51) –9, –7, –5, –3



A)



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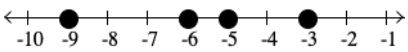

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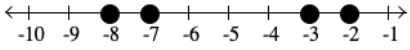
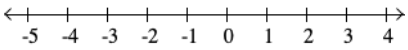


D)

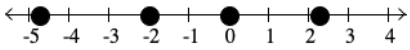


Answer: A

52) –4.75, –2, 0, 2.25



A)



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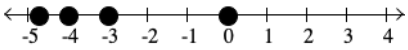

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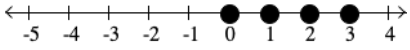
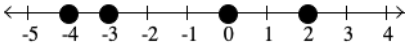


D)



Answer: A

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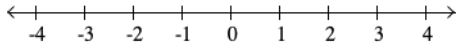
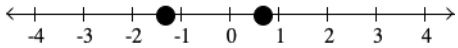
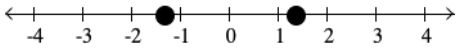
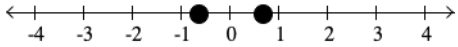
53) $\frac{4}{3}, -\frac{4}{3}$

A) 

B) 

C) 

D) 

Answer: A

Insert <, >, or = to make the statement true.

54) 9 ____ 8

A) < B) > C) =

Answer: B

55) 3.4 ____ −1.0

A) = B) < C) >

Answer: C

56) −83 ____ −37

A) = B) > C) <

Answer: C

57) 19 ____ −19

A) = B) > C) <

Answer: B

58) $\frac{2}{3}$ ____ 0.67

A) < B) = C) >

Answer: A

59) 2.23 ____ $\sqrt{5}$

A) < B) = C) >

Answer: A

60) 3.14 ____ π

A) = B) < C) >

Answer: B

Write the statement as an inequality.

61) x is negative

A) $x > 0$ B) $x \leq 0$ C) $x < 0$ D) $x \geq 0$

Answer: C

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62) y is greater than –14

A) $y \geq -14$ B) $y > -14$ C) $y \leq -14$ D) $y < -14$

Answer: B

63) y is greater than or equal to 50

A) $y > 50$ B) $y < 50$ C) $y \geq 50$ D) $y \leq 50$

Answer: C

64) z is less than or equal to –6

A) $z > -6$ B) $z = -6$ C) $z < -6$ D) $z \leq -6$

Answer: D

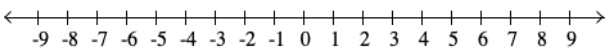
65) x is less than 4

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

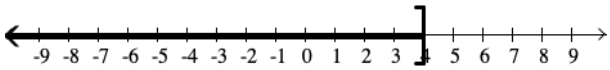
Answer: C

Graph the numbers on the real number line.

66) $x > 4$



A)



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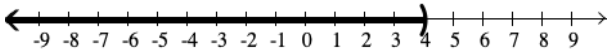

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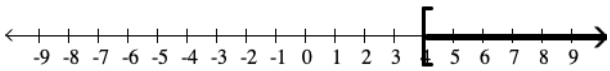

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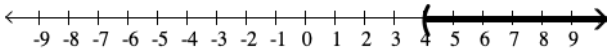

Answer: D

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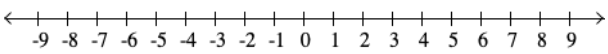
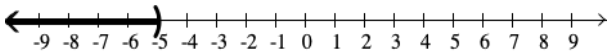
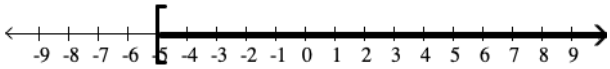
67) $x < -5$



A)



B)



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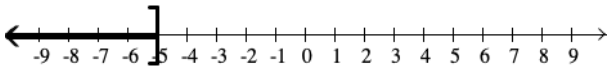
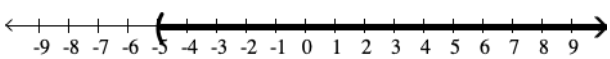
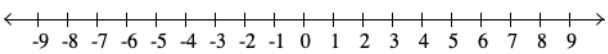


D)

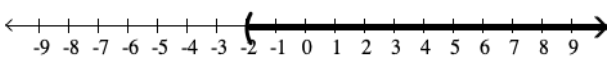


Answer: A

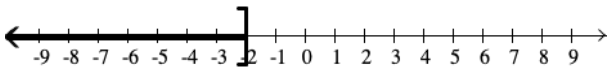
68) $x \geq -2$



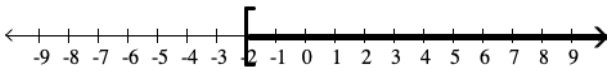
A)



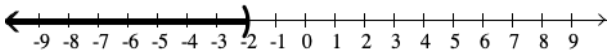
B)



C)



D)



Answer: C

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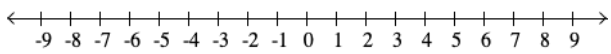
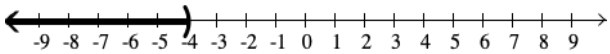
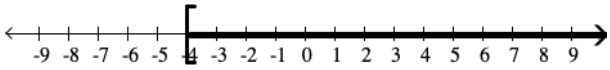
69) $x \leq -4$



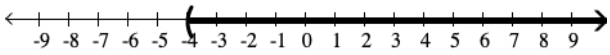
A)



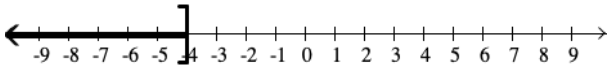
B)



C)



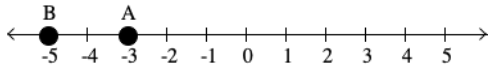
D)



Answer: D

Use the given real number line to compute the distance.

70) Find d(A, B)



A) –2 B) 3 C) 1 D) 2

Answer: D

Evaluate the expression using the given values.

71) $x + 12y \quad x = 1, y = -1$

A) –11 B) 13 C) 11 D) 0

Answer: A

72) $-8xy + 4y - 6 \quad x = 3, y = 2$

A) –46 B) –40 C) 50 D) –34

Answer: A

73) $-2x + y \quad x = -4, y = -1$

A) –3 B) –9 C) –5 D) 7

Answer: D

74) $\dfrac{11x - 3y}{5} \quad x = 4, y = 9$

A) $\dfrac{71}{5}$ B) $\dfrac{41}{5}$ C) $\dfrac{17}{5}$ D) $\dfrac{87}{5}$

Answer: C

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75) $\frac{6x - 7y}{x + 2}$ x = 3, y = 2

A) 1 B) $\frac{9}{4}$ C) $\frac{4}{5}$ D) $\frac{9}{5}$

Answer: C

76) $\frac{3xy + 65}{x}$ x = 5, y = 7

A) 86 B) 34 C) 13 D) 16

Answer: B

77) $|x + y|$ x = –3, y = 7

A) 10 B) –4 C) 4 D) –10

Answer: C

78) $|x| - |y|$ x = –8, y = 3

A) 5 B) –11 C) –5 D) 11

Answer: A

79) $|6x - 7y|$ x = 4, y = 6

A) 18 B) –66 C) –18 D) 66

Answer: A

80) $\frac{|x|}{x} + \frac{|y|}{y}$ x = 6 and y = –4

A) 2 B) –1 C) 0 D) 1

Answer: C

81) $|-4x + 2y|$ x = 4, y = 2

A) 0 B) 20 C) 16 D) 12

Answer: D

82) $4|x| + 5|y|$ x = 2, y = –6

A) –38 B) –22 C) 38 D) 22

Answer: C

Use the formula $C = \frac{5}{9}(F - 32)$ for converting degrees Fahrenheit into degrees Celsius to find the Celsius measure of the Fahrenheit temperature.

83) F = 131°

A) 65° C B) 55° C C) 50° C D) 60° C

Answer: B

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Express the statement as an equation involving the indicated variables.

84) The area A of a rectangle is the product of its length l and its width w.

A) $A = lw$ B) $A = l + w$ C) $A = \frac{l}{w}$ D) $A = 2(l + w)$

Answer: A

85) The perimeter P of a rectangle is twice the sum of its length l and its width w.

A) $P = lw$ B) $P = l + w$ C) $P = 2lw$ D) $P = 2(l + w)$

Answer: D

86) The circumference C of a circle is the product of π and its diameter d.

A) $C = \frac{\pi}{d}$ B) $C = \pi d$ C) $C = \pi + d$ D) $C = 2\pi d$

Answer: B

87) The area A of a triangle is one-half the product of its base b and its height h.

A) $A = 2bh$ B) $A = \frac{1}{2}bh$ C) $A = bh$ D) $A = \frac{1}{2}(b + h)$

Answer: B

88) The volume V of a sphere is $\frac{4}{3}$ times π times the cube of the radius r.

A) $V = \frac{4}{3}\pi r$ B) $V = \frac{4}{3}\pi \sqrt[3]{r}$ C) $V = \frac{4}{3}\pi r^3$ D) $V = \frac{4}{3}\pi r^2$

Answer: C

89) The surface area S of a sphere is 4 times π times the square of the radius r.

A) $S = 4\pi r$ B) $S = \pi r^2$ C) $S = 4\pi r^2$ D) $S = 4\pi \sqrt{r}$

Answer: C

90) The volume V of a cube is the cube of the length x of a side.

A) $V = x^3$ B) $V = 3x$ C) $V = \sqrt[3]{x}$ D) $V = x^2$

Answer: A

91) The surface area S of a cube is 6 times the square of the length x of a side.

A) $S = x^2$ B) $S = 6x$ C) $S = 6x^2$ D) $S = 6 + x^2$

Answer: C

Solve the problem.

92) The weekly production cost C of manufacturing x calendars is given by $C(x) = 20 + 3x$, where the variable C is in dollars. What is the cost of producing 214 calendars?

A) $4283.00 B) $234.00 C) $642.00 D) $662.00

Answer: D

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93) At the beginning of the month, Christopher had a balance of $197 in his checking account. During the next month, he wrote a check for $39, deposited $123, and wrote another check for $66. What was his balance at the end of the month?

A) $215 B) $31 C) –$31 D) –$215

Answer: A

Determine which value(s), if any, must be excluded from the domain of the variable in the expression.

94) $\frac{x^2 - 1}{x}$

A) $x = -1$ B) $x = 0$ C) $x = 1, x = -1$ D) $x = 1, x = 0$

Answer: B

95) $\frac{4x - 7}{x^2 - 9}$

A) $x = 3, x = -3$ B) $x = \frac{7}{4}$ C) $x = 9$ D) $x = 3$

Answer: A

96) $\frac{x^3 + 6x^4}{x^2 + 16}$

A) $x = -4$ B) $x = -16$ C) $x = 0, x = -\frac{1}{6}$ D) none

Answer: D

97) $\frac{x^2 + 9x + 8}{x^3 - 25x}$

A) $x = 5, x = 0$ B) $x = 5, x = -5, x = 0$
C) $x = 0$ D) $x = 5, x = -5$

Answer: B

98) $\frac{x}{x - 9}$

A) $x = 9$ B) $x = 0$ C) $x = -9$ D) none

Answer: A

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

A) $x = 7$ B) $x = -7$ C) $x = 0$ D) none

Answer: B

100) $\frac{x - 8}{x - 4}$

A) $x = 0$ B) $x = 4$ C) $x = -4$ D) none

Answer: B

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Simplify the expression.

101) 5^4

A) 20 B) 625 C) –20 D) –625

Answer: B

102) -4^3

A) 12 B) –64 C) 64 D) –12

Answer: B

103) 2^{-4}

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

Answer: B

104) $(-2)^{-4}$

A) 16 B) –16 C) $-\frac{1}{16}$ D) $\frac{1}{16}$

Answer: D

105) -5^{-4}

A) 625 B) $\frac{1}{20}$ C) –625 D) $-\frac{1}{625}$

Answer: D

106) $(-4)^3$

A) –12 B) 12 C) –64 D) 64

Answer: C

107) $4^{-6} \cdot 4^3$

A) $\frac{1}{256}$ B) 16 C) $\frac{1}{64}$ D) 64

Answer: C

108) $(2^{-3})^{-1}$

A) 8 B) $\frac{1}{4}$ C) $\frac{1}{8}$ D) 4

Answer: A

Simplify the expression. Express the answer so that all exponents are positive. Whenever an exponent is 0 or negative, we assume that the base is not 0.

109) $(2xy)^3$

A) $\frac{1}{8x^3y^3}$ B) $8x^3y^3$ C) $2x^3y^3$ D) $8xy$

Answer: B

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110) $(10x^3)^{-2}$

A) $\frac{x^6}{100}$ B) $\frac{1}{100x^6}$ C) $\frac{100}{x^6}$ D) $100x^6$

Answer: B

111) $(-3x^2)^{-1}$

A) $-\frac{1}{9x^2}$ B) $\frac{1}{9x^2}$ C) $\frac{1}{3x^2}$ D) $-\frac{1}{3x^2}$

Answer: D

112) $(x^3y^{-1})^6$

A) $\frac{x^{18}}{y^6}$ B) $\frac{y^6}{x^{18}}$ C) $x^{18}y^6$ D) $\frac{1}{x^{18}y^6}$

Answer: A

113) $(x^{-6}y)^6$

A) $\frac{y^6}{x^6}$ B) $x^{36}y^6$ C) $\frac{y^6}{x^{36}}$ D) $\frac{1}{x^{36}y^6}$

Answer: C

114) $\frac{x^{-2}y^6}{xy^9}$

A) $\frac{1}{x^3y^3}$ B) $\frac{x}{y^3}$ C) $\frac{y^3}{x^3}$ D) $\frac{1}{xy^3}$

Answer: A

115) $\frac{x^{-4}y^9}{x^5y^{13}}$

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

Answer: A

116) $\left(\frac{5x^{-1}}{2y^{-1}}\right)^{-3}$

A) $\frac{8y^3}{125x^3}$ B) $\frac{8x^3}{125y^3}$ C) $\frac{125x^3}{8y^3}$ D) $\frac{125y^3}{8x^3}$

Answer: B

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117) $\left(\frac{9x^{-4}}{5y^{-4}}\right)^{-1}$

A) $\frac{9x^{41}}{5y^{41}}$ B) $\frac{5x^4}{9y^4}$ C) $\frac{5y^4}{9x^4}$ D) $\frac{9x^4}{5y^4}$

Answer: B

118) $(x^{-9}y^4)^{-7}z^2$

A) $\frac{x^{63}}{y^{28}z^2}$ B) $\frac{y^{28}z^2}{x^{63}}$ C) $\frac{y^{28}}{x^{63}z^2}$ D) $\frac{x^{63}z^2}{y^{28}}$

Answer: D

119) $\left(\frac{-2x^2y^{-4}}{3z^6}\right)^{-2}$

A) $\frac{9z^{12}}{4x^4y^8}$ B) $\frac{4x^4}{9y^8z^{12}}$ C) $\frac{9y^8z^{12}}{4x^4}$ D) $\frac{9y^8}{4x^4z^{12}}$

Answer: C

Evaluate the expression using the given value of the variables.

120) $(x + 3y)^2$ for $x = 4$, $y = 3$

A) 26 B) 13 C) 49 D) 169

Answer: D

121) $6x^{-1}y^2$ for $x = -2$, $y = -2$

A) $-\frac{3}{4}$ B) -12 C) $-\frac{1}{3}$ D) -48

Answer: B

122) $-3x^2 + 2y^2$ for $x = 3$, $y = -3$

A) 9 B) -33 C) -45 D) -9

Answer: D

123) $7x^3 - 3x^2 + 2x + 6$ for $x = 1$

A) 12 B) 0 C) 18 D) 8

Answer: A

Solve.

124) What is the value of $\frac{(6666)^4}{(2222)^4}$?

A) $(2222)^4$ B) 162 C) $(3333)^4$ D) 81

Answer: D

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Simplify the expression.

125) $\sqrt{64}$

A) 8 B) $\frac{1}{64}$ C) 4096 D) not a real number

Answer: A

126) $\sqrt{(-4)^2}$

A) $\frac{1}{16}$ B) 4 C) 256 D) not a real number

Answer: B

Find the value of the expression using the given values.

127) $\sqrt{x^2}$ x = 7

A) $-\sqrt{14}$ B) –7 C) 7 D) $\sqrt{14}$

Answer: C

128) $(\sqrt{x})^2$ x = 3

A) 3 B) $\frac{1}{9}$ C) $\frac{1}{3}$ D) 9

Answer: A

129) $\sqrt{x^2 + y^2}$ x = 6, y = 8

A) 9 B) 7 C) 5 D) 10

Answer: D

130) $\sqrt{x^2 + y^2}$ x = 1, y = –2

A) 3 B) –1 C) $\sqrt{5}$ D) 2

Answer: C

131) $\sqrt{x^2} + \sqrt{y^2}$ x = 3, y = 8

A) –5 B) 5 C) 73 D) 11

Answer: D

132) y^x x = –3, y = 4

A) –64 B) $\frac{1}{64}$ C) $-\frac{1}{64}$ D) 64

Answer: B

Use a calculator to evaluate the expression. Round the answer to three decimal places.

133) $(-1.19)^{-5}$

A) –0.419 B) 2.386 C) –2.386 D) 0.419

Answer: A

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134) $-(3.06)^{-4}$

A) −87.677 B) 0.011 C) 87.677 D) −0.011

Answer: D

135) $(-0.23)^4$

A) 357.346 B) −0.003 C) 0.003 D) −357.346

Answer: C

Write the number in scientific notation.

136) 292

A) 2.92×10^{-2} B) 2.92×10^{3} C) 2.92×10^{2} D) 2.92×10^{1}

Answer: C

137) 28.79

A) 2.879×10^{1} B) 2.879×10^{-1} C) 2.879×10^{-2} D) 2.879×10^{2}

Answer: A

138) 166.542

A) 1.66542×10^{3} B) 1.66542×10^{-2} C) 1.66542×10^{2} D) 1.66542×10^{-3}

Answer: C

139) 32,000

A) 3.2×10^{-5} B) 3.2×10^{5} C) 3.2×10^{4} D) 3.2×10^{-4}

Answer: C

140) 36,000,000

A) 3.6×10^{8} B) 3.6×10^{-8} C) 3.6×10^{-7} D) 3.6×10^{7}

Answer: D

141) 0.000662

A) $6.62 \circ 10^{-4}$ B) 6.62×10^{-3} C) 6.62×10^{-5} D) 6.62×10^{4}

Answer: A

142) 0.00002547

A) 2.547×10^{5} B) 2.547×10^{-5} C) 2.547 ± 10^{-4} D) 2.547×10^{4}

Answer: B

143) 0.000006079

A) 6.079×10^{-5} B) 6.079×10^{-7} C) 6.079×10^{6} D) 6.079×10^{-6}

Answer: D

144) 0.000000762018

A) 7.62018×10^{7} B) 7.62018×10^{-7} C) 7.62018×10^{6} D) 7.62018×10^{-6}

Answer: B

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145) 0.0000000227011

A) 2.27011×10^{-9} B) 2.27011×10^{8} C) 2.27011×10^{-8} D) 2.27011×10^{-7}

Answer: C

146) In a certain state, the railway system carried a total of 156,000,000,000 passengers.

A) 1.56×10^{10} B) 15.6×10^{11} C) 1.56×10^{12} D) 1.56×10^{11}

Answer: D

147) A business projects next year's profits to be $3,750,000.

A) 3.75×10^{6} B) 3.75×10^{-7} C) 3.75×10^{7} D) 3.75×10^{5}

Answer: A

148) A computer compiles a program in 0.000539 seconds.

A) 5.39×10^{-4} B) 5.39×10^{-5} C) 5.39×10^{3} D) 5.39×10^{-6}

Answer: A

Write the number as a decimal.

149) 5.95×10^{5}

A) 297.5 B) 595,000 C) 59,500 D) 5,950,000

Answer: B

150) 7.404×10^{4}

A) 74,040 B) 740,400 C) 296.16 D) 7404

Answer: A

151) 5.0227×10^{7}

A) 5,022,700 B) 50,227,000 C) 502,270,000 D) 351.589

Answer: B

152) 9.16×10^{-4}

A) 0.000916 B) 0.0000916 C) 0.00916 D) –916,000

Answer: A

153) 6.125×10^{-5}

A) 0.000006125 B) 0.00006125 C) –612,500 D) 0.0006125

Answer: B

154) 1.657×10^{-6}

A) –1,657,000 B) 0.0000001657 C) 0.000001657 D) 0.00001657

Answer: C

155) 8.0453×10^{-7}

A) 0.0000080453 B) –804530,000 C) 0.000000080453 D) 0.00000080453

Answer: D

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156) There are 2.491×10^6 miles of highways, roads, and streets in a certain country.

A) 249,100,000 B) 24,910,000 C) 249,100 D) 2,491,000

Answer: D

The lengths of the legs of a right triangle are given. Find the hypotenuse.

157) a = 4, b = 3

A) 25 B) 5 C) 2 D) 7

Answer: B

158) a = 6, b = 8

A) 10 B) 5 C) 9 D) 7

Answer: A

The lengths of the sides of a triangle are given. Determine if the triangle is a right triangle. If it is, identify the hypotenuse.

159) 7, 24, 25

A) right triangle; 24 B) right triangle; 7 C) right triangle; 25 D) not right triangle

Answer: C

160) 4, 5, 6

A) right triangle; 4 B) right triangle; 6 C) right triangle; 5 D) not right triangle

Answer: D

161) 6, 8, 10

A) right triangle; 6
B) right triangle; 8
C) right triangle; 10
D) not a right triangle

Answer: C

162) 15, 36, 39

A) right triangle; 36
B) right triangle; 15
C) right triangle; 39
D) not a right triangle

Answer: C

163) 28, 96, 100

A) right triangle; 28
B) right triangle; 100
C) right triangle; 96
D) not a right triangle

Answer: B

164) 8, 16, 20

A) right triangle; 16
B) right triangle; 20
C) right triangle; 8
D) not a right triangle

Answer: D

165) 9, 12, 18

A) right triangle; 12
B) right triangle; 18
C) right triangle; 9
D) not a right triangle

Answer: D

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Solve. Use the fact that the radius of the Earth is 3960 miles and 1 mile = 5280 feet.

166) A guard tower at a state prison stands 85 feet tall. How far can a guard see from the top of the tower? Round to the nearest tenth of a mile.

A) 824.9 mi B) 11.3 mi C) 16 mi D) 5600.3 mi

Answer: B

167) A person who is 3 feet tall is standing on the beach and looks out onto the ocean. Suddenly, a ship appears on the horizon. How far is the ship from the shore? Round to the nearest tenth of a mile.

A) 154.2 mi B) 5600.3 mi C) 3 mi D) 2.1 mi

Answer: D

Solve the problem.

168) Find the area A of a rectangle with length 14 ft and width 17 ft.

A) $A = 31\ ft^2$ B) $A = 238\ ft^2$ C) $A = 476\ ft^2$ D) $A = 56\ ft^2$

Answer: B

169) Find the area A of a rectangle with length 3.8 ft and width 7.0 ft.

A) $A = 26.6\ ft^2$ B) $A = 15.2\ ft^2$ C) $A = 53.2\ ft^2$ D) $A = 10.8\ ft^2$

Answer: A

170) Find the area A of a triangle with height 7 cm and base 7 cm.

A) $A = \frac{49}{2}$ cm B) $A = 49\ cm^2$ C) $A = \frac{49}{2}\ cm^2$ D) $A = 49$ cm

Answer: C

171) Find the area A and circumference C of a circle of radius 11 in.. Express the answer in terms of π.

A) $A = 121\pi\ in.^2$; $C = 22\pi$ in. B) $A = 44\pi\ in.^2$; $C = 11\pi$ in.

C) $A = 484\pi\ in.^2$; $C = 11\pi$ in. D) $A = 22\pi\ in.^2$; $C = 22\pi$ in.

Answer: A

172) Find the area A and circumference C of a circle of diameter 14 yd. Use 3.14 for π. Round the result to the nearest tenth.

A) $A = 615.4\ yd^2$; $C = 22.0$ yd B) $A = 44\ yd^2$; $C = 44.0$ yd

C) $A = 87.9\ yd^2$; $C = 22.0$ yd D) $A = 153.9\ yd^2$; $C = 44.0$ yd

Answer: D

173) Find the volume V of a rectangular box with length 8 in., width 7 in., and height 4 in..

A) $V = 392\ in.^3$ B) $V = 224\ in.^3$ C) $V = 256\ in.^3$ D) $V = 112\ in.^3$

Answer: B

174) Find the surface area S of a rectangular box with length 3 ft, width 4 ft, and height 5 ft.

A) $47\ ft^2$ B) $74\ ft^2$ C) $94\ ft^2$ D) $88\ ft^2$

Answer: C

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175) Find the volume V and surface area S of a sphere of radius 10 centimeters. Express the answer in terms of π.

A) $V = 4000\pi$ cm^3; $S = 25\pi$ cm^2

B) $V = 1000\pi$ cm^3; $S = 100\pi$ cm^2

C) $V = \frac{4000}{3}\pi$ cm^3; $S = 400\pi$ cm^2

D) $V = \frac{1000}{3}\pi$ cm^3; $S = \frac{4000}{3}\pi$ cm^2

Answer: C

176) Find the volume V of a sphere of radius 4.5 yd. Use 3.14 for π. If necessary, round the result to the nearest tenth.

A) $V = 381.5$ yd^3 B) $V = 214.6$ yd^3 C) $V = 84.8$ yd^3 D) $V = 3052.1$ yd^3

Answer: A

177) Find the volume V of a right circular cylinder with radius 5 in and height 10 in. Express the answer in terms of π.

A) $V = 250\pi$ in^3 B) $V = 25\pi$ in^3 C) $V = \frac{125}{2}\pi$ in^3 D) $V = 50\pi$ in^3

Answer: A

178) Find the surface area S of a right circular cylinder with radius 4 cm, and height 10 cm. Use 3.14 for π. Round your answer to one decimal place.

A) 351.6 cm^2 B) 502.4 cm^2 C) 226.1 cm^2 D) 175.8 cm^2

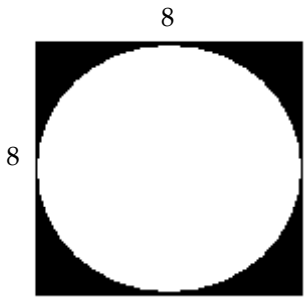
Answer: A

179) Find the volume V of a sphere of diameter 3 cm. Use 3.14 for π. If necessary, round the result to the nearest tenth.

A) $V = 113$ cm^3 B) $V = 7.9$ cm^3 C) $V = 14.1$ cm^3 D) $V = 9.4$ cm^3

Answer: C

180) Find the area of the shaded region. Express the answer in terms of π.



A) $256 - 64\pi$ square units

B) $64 - 16\pi$ square units

C) $16\pi + 64$ square units

D) $64 - 32\pi$ square units

Answer: B

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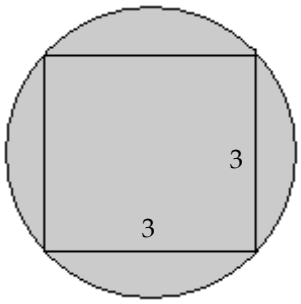
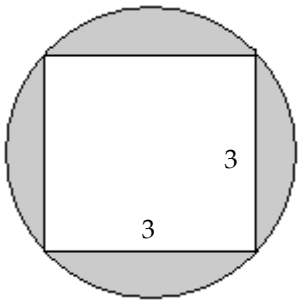
181) Find the area of the shaded region. Express the answer in terms of π.



A) 3π square units B) $\frac{9}{2}\pi$ square units C) $\frac{9}{2}$ square units D) $\frac{9}{4}\pi$ square units

Answer: B

182) Find the area of the shaded region. Express the answer in terms of π.



A) $\frac{9}{2}\pi - 9$ square units B) 9 square units

C) $3\pi - 3$ square units D) $\frac{9}{4}\pi - 9$ square units

Answer: A

183) A bicycle wheel makes 3 revolutions. Determine how far the bicycle travels in inches if the diameter of the wheel is 16 in. Use $\pi \approx 3.14$. Round to the nearest tenth.

A) 150.7 in. B) 50.2 in. C) 301.4 in. D) 48 in.

Answer: A

184) A rectangular patio has dimensions 10 feet by 15 feet. The patio is surrounded by a border with a uniform width of 4 feet. Find the area of the border.

A) 136 ft^2 B) 166 ft^2 C) 264 ft^2 D) 116 ft^2

Answer: C

185) A circular swimming pool, 20 feet in diameter, is enclosed by a circular deck that is 5 feet wide. What is the area of the deck? Use $\pi = 3.1416$.

A) 675.4 ft^2 B) 392.7 ft^2 C) 942.5 ft^2 D) 314.2 ft^2

Answer: B

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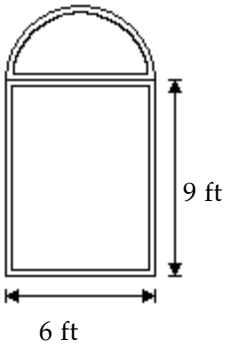
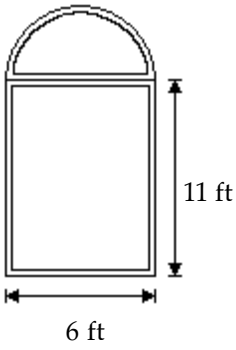
186) Find the perimeter. Approximate the result to the nearest tenth using 3.14 for π.



A) 42.8 ft B) 33.4 ft C) 48.8 ft D) 39.4 ft

Answer: B

187) Find the area of the window. Approximate the result to the nearest tenth using 3.14 for π.

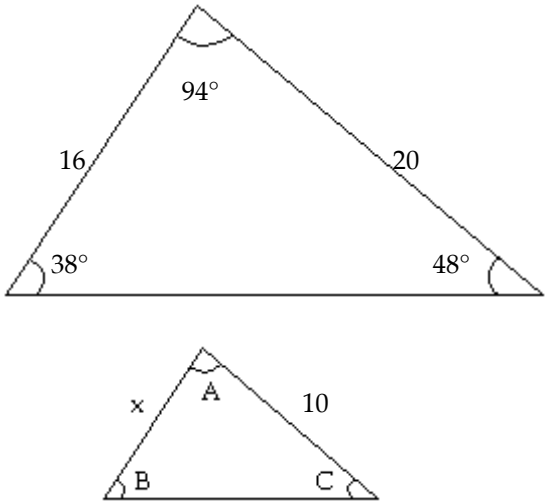


A) 80.1 ft^2 B) 70.7 ft^2 C) 179 ft^2 D) 122.5 ft^2

Answer: A

The triangles are similar. Find the missing length x and the missing angles A, B, C.

188)



A) x = 16 units; A = 38°; B = 94°; C = 48° B) x = 8 units; A = 94°; B = 38°; C = 48°

C) x = 8 units; A = 48°; B = 38°; C = 94° D) x = 16 units; A = 94°; B = 38°; C = 48°

Answer: B

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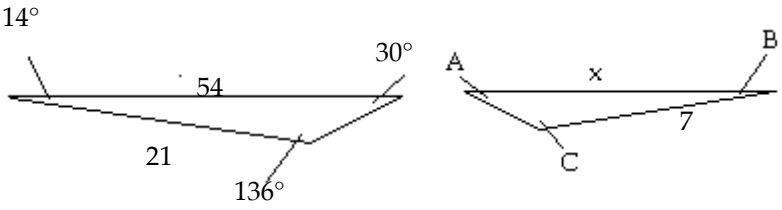
189)



A) x = 18; A = 136; B = 14; C = 30
B) x = 54; A = 30; B = 14; C = 136
C) x = 54; A = 14; B = 30; C = 136
D) x = 18; A = 30; B = 14; C = 136

Answer: D

Solve. If necessary, round to the nearest tenth.

190) A flagpole casts a shadow of 29 feet. Nearby, a 10–foot tree casts a shadow of 3 feet. What is the height of the flagpole?

A) 8.7 ft
B) 1 ft
C) 870 ft
D) 96.7 ft

Answer: D

191) If a flagpole 21 feet tall casts a shadow that is 28 feet long, find the length of the shadow cast by an antenna which is 36 feet tall.

A) 48 ft
B) 43 ft
C) 16.3 ft
D) 27 ft

Answer: A

192) The zoo has hired a landscape architect to design the triangular lobby of the children's petting zoo. In his scale drawing, the longest side of the lobby is 9 cm. The shortest side of the lobby is 8 cm. The longest side of the actual lobby will be 43 m. How long will the shortest side of the actual lobby be?

A) 48.4 m
B) 38.2 m
C) 0.4 m
D) 0.5 m

Answer: B

193) If a tree 52.5 feet tall casts a shadow that is 21 feet long, find the height of a tree casting a shadow that is 5 feet long.

A) 12.5 ft
B) 220.5 ft
C) 2 ft
D) 36.5 ft

Answer: A

Tell whether the expression is a monomial. If it is, name the variable(s) and coefficient, and give the degree of the monomial.

194) $-8x$

A) Monomial, variable x; coefficient 1; degree –8
B) Monomial; variable x; coefficient –8; degree 1
C) Monomial,; variable x; coefficient –8; degree 0
D) Not a monomial

Answer: B

195) $-16x^6$

A) Monomial; variable x; coefficient 6; degree 0
B) Monomial; variable x; coefficient –16; degree 6
C) Monomial; variable x; coefficient 6; degree –16
D) Not a monomial

Answer: B

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196) $\frac{14}{x}$

A) Monomial; variable x; coefficient 14; degree –1
B) Monomial; variable x; coefficient 14; degree 1
C) Monomial; variable x; coefficient 14; degree 0
D) Not a monomial

Answer: D

197) $15x^{-2}$

A) Monomial; variable x; coefficient 15; degree –2
B) Monomial; variable x; coefficient 15; degree 2
C) Monomial; variable x; coefficient 2; degree 15
D) Not a monomial

Answer: D

198) $-6xy^6$

A) Monomial; variables x, y; coefficient –6; degree 6
B) Monomial; variables x, y; coefficient –6; degree 1
C) Monomial; variables x, y; coefficient –6; degree 7
D) Not a monomial

Answer: C

199) $-9x^3y^6$

A) Monomial; variables x, y; coefficient –9; degree 9
B) Monomial; variables x, y; coefficient –9; degree 6
C) Monomial; variables x, y; coefficient –9; degree 3
D) Not a monomial

Answer: A

200) $\frac{5x}{y}$

A) Monomial; variables x, y; coefficient 5; degree –2
B) Monomial; variables x, y; coefficient 5; degree 2
C) Monomial; variables x, y; coefficient 5; degree 1
D) Not a monomial

Answer: D

201) $-\frac{2x^7}{y^3}$

A) Monomial; variables x, y; coefficient 2; degree 4
B) Monomial; variables x, y; coefficient 2; degree 7
C) Monomial; variables x, y; coefficient 2; degree 3
D) Not a monomial

Answer: D

202) $4x^2 - 3$

A) Monomial; variable x; coefficient 4; degree 1
B) Monomial; variable x; coefficient 4; degree 2
C) Monomial; variable x; coefficient 3 ; degree 2
D) Not a monomial

Answer: D

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Tell whether the expression is a polynomial. If it is, give its degree.

203) $3x^4 - 5$

A) Polynomial; degree 5
B) Polynomial; degree 3
C) Polynomial; degree 4
D) Not a polynomial

Answer: C

204) $1 - 6x$

A) Polynomial; degree 6
B) Polynomial; degree 1
C) Polynomial; degree –6
D) Not a polynomial

Answer: B

205) 8

A) Polynomial, degree 1
B) Polynomial, degree 0
C) Polynomial, degree 8
D) Not a polynomial

Answer: B

206) 3π

A) polynomial, degree 0
B) polynomial, degree 3
C) polynomial, degree 1
D) not a polynomial

Answer: A

207) $4x^5 - \frac{2}{x}$

A) Polynomial; degree –1
B) Polynomial; degree 5
C) Polynomial; degree 1
D) Not a polynomial

Answer: D

208) $\frac{10}{x} + 1$

A) Polynomial, degree 10
B) Polynomial, degree –1
C) Polynomial, degree 0
D) Not a Polynomial

Answer: D

209) $-3y^8 - \sqrt{3}$

A) Polynomial; degree –3
B) Polynomial; degree 8
C) Polynomial; degree 3
D) Not a polynomial

Answer: B

210) $-6z^5 + z$

A) Polynomial; degree 1
B) Polynomial; degree 5
C) Polynomial; degree 6
D) Not a polynomial

Answer: B

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211) $\frac{6x^8 + 15x^5}{3x^2}$

A) Polynomial; degree 0
B) Polynomial; degree 8
C) Polynomial; degree 5
D) Not a polynomial

Answer: D

Add or subtract as indicated. Express the answer as a single polynomial in standard form.

212) $(3x^2 + 5x - 9) + (10x + 9)$

A) $3x^2 + 15x$ B) $18x^3$ C) $3x^2 + 15x - 18$ D) $3x^2 + 5x + 18$

Answer: A

213) $(2x^2 + 2x + 3) + (8x^2 - 8x + 3)$

A) $10x^2 + 6x + 6$ B) $10x^2 - 6x - 6$ C) $11x^2 - 6x + 5$ D) $10x^2 - 6x + 6$

Answer: D

214) $(8x^2 + 3x + 9) - (3x^2 - 2x - 17)$

A) $5x^2 + 5x + 26$ B) $5x^2 + 5x - 8$ C) $5x^2 + 5x - 26$ D) $5x^2 + 6x - 8$

Answer: A

215) $(9x^5 + 7x^2) + (4x^5 + 4x^2)$

A) $24x^7$ B) $24x^{14}$ C) $13x^5 + 11x^2$ D) $13x^{10} + 11x^4$

Answer: C

216) $(7x^5 - 6x^3) - (-3x^5 - 4x^3)$

A) $10x^5 - 10x^3$ B) $4x^5 - 10x^3$ C) $10x^5 - 2x^3$ D) $8x^8$

Answer: C

217) $(2x^5 + 9x^4) + (3x^5 + 3x^4 + 3)$

A) $3x + 12x^5 + 6x^4$ B) $5x^5 + 12x^4 + 3$ C) $23x^{10}$ D) $6x^5 + 5x^4 + 3x$

Answer: B

218) $(5x^2 + 1) - (-x^3 + 8x^2 + 6)$

A) $x^3 - 3x^2 - 5$ B) $6x^3 + 9x^2 - 6$ C) $6x^3 + 8x^2 - 5$ D) $x^3 + 13x^2 + 7$

Answer: A

219) $(2x^7 - 8x^6 + 13) - (6x^7 + 14x^6 - 6)$

A) $-7x^{13}$ B) $-4x^7 - 2x^6 + 7$ C) $-4x^7 - 22x^6 + 7$ D) $-4x^7 - 22x^6 + 19$

Answer: D

220) $(6x^5 - 4x^2 - 9) - (2x^2 + 9x^5 - 12)$

A) $-3x^5 + 5x^2 - 21$ B) $-3x^5 - 6x^2 - 21$ C) $-3x^5 - 6x^2 + 3$ D) $-6x^7$

Answer: C

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221) $(2x^6 + 9x^5 + 4x) + (3x^6 + 8x^5 + 9x)$

A) $35x^{12}$ B) $5x + 17x^6 + 13x^5$ C) $7x^6 + 10x^5 + 18x$ D) $5x^6 + 17x^5 + 13x$

Answer: D

222) $-1(x^2 + 2x + 1) + (4x^2 - x + 7)$

A) $3x^2 - 3x + 6$ B) $3x^2 - 3x + 8$ C) $-5x^2 - 3x + 6$ D) $3x^2 - 2x + 6$

Answer: A

223) $7(-3x^3 + x^2 - 1) - 5(5x^3 - 3x + 2)$

A) $-46x^3 + x^2 + 15x - 17$ B) $-46x^3 + 7x^2 + 15x + 17$

C) $-46x^3 + 7x^2 - 15x - 17$ D) $-46x^3 + 7x^2 + 15x - 17$

Answer: D

224) $(x^2 + 1) - (7x^2 - 6) + (x^2 + x + 9)$

A) $-7x^2 + x + 16$ B) $-6x^2 + x + 16$ C) $-5x^2 - 5x + 10$ D) $-5x^2 + x + 16$

Answer: D

225) $-3(1 - y^3) - 5(1 + y + y^2 + y^3)$

A) $-2y^3 + 5y^2 - 5y + 8$ B) $-2y^3 - 5y^2 - 5y - 8$

C) $-2y^3 - 5 - ay^2 - 5y - 8$ D) $2y^3 - 5y^2 - 5y - 8$

Answer: B

Perform the indicated operations. Express the answer as a single polynomial in standard form.

226) $10x(2x + 6)$

A) $2x^2 + 60x$ B) $20x^2 + 60x$ C) $20x^2 + 6x$ D) $80x^2$

Answer: B

227) $5x^2(-8x - 5)$

A) $-40x^3 - 5$ B) $-40x - 25$ C) $-40x^3 - 25x^2$ D) $-65x^2$

Answer: C

228) $-9x^6(10x^4 + 12)$

A) $-90x^{10} - 108x^6$ B) $-90x^{10} + 12$ C) $-198x^6$ D) $-90x^4 - 108$

Answer: A

229) $3x^4(-9x^6 - 6x^2 + 10)$

A) $-27x^{10} - 18x^6$ B) $-27x^6 - 18x^2 + 30$

C) $-27x^{10} - 18x^6 + 30x^4$ D) $-27x^{10} - 6x^2 + 10$

Answer: C

230) $(x - 12)(x^2 + 4x - 3)$

A) $x^3 - 8x^2 - 51x + 36$ B) $x^3 - 8x^2 - 45x - 36$

C) $x^3 + 16x^2 + 51x + 36$ D) $x^3 + 16x^2 + 45x - 36$

Answer: A

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231) $(6y + 11)(7y^2 - 2y - 9)$

A) $42y^3 + 65y^2 - 76y - 99$ B) $119y^2 - 34y - 153$

C) $42y^3 - 12y^2 - 54y + 11$ D) $42y^3 + 89y^2 + 76y + 99$

Answer: A

Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

232) $(x + 9)(x - 2)$

A) $x^2 + 7x - 18$ B) $x^2 + 6x - 18$ C) $x^2 - 18x + 7$ D) $x^2 + 7x + 7$

Answer: A

233) $(-3x - 9)(x + 1)$

A) $-3x^2 - 12x - 9$ B) $-3x^2 - 9x - 12$ C) $-3x^2 - 14x - 9$ D) $-3x^2 - 12x - 12$

Answer: A

234) $(-5x + 12)(-3x - 9)$

A) $-8x^2 + 9x + 9$ B) $15x^2 + 9x + 9$ C) $-8x^2 + 9x - 108$ D) $15x^2 + 9x - 108$

Answer: D

235) $(x + 7y)(x - 11y)$

A) $x^2 - 4xy - 77y^2$ B) $x - 4xy - 77y$ C) $x^2 - 7xy - 77y^2$ D) $x^2 - 4xy - 4y^2$

Answer: A

236) $(x - 5y)(-2x + 5y)$

A) $-2x^2 + 15xy - 25y^2$ B) $-2x^2 + 15xy + 15y^2$

C) $x^2 + 15xy - 25y^2$ D) $x^2 + 15xy + 15y^2$

Answer: A

237) $(-3x - 9y)(4x - 5y)$

A) $-12x^2 - 21xy - 21y^2$ B) $-12x^2 - 21xy + 45y^2$

C) $-12x^2 - 36xy + 45y^2$ D) $-12x^2 + 15xy + 45y^2$

Answer: B

Multiply the polynomials. Express the answer as a single polynomial in standard form.

238) $(x + 4)(x - 4)$

A) $x^2 + 8x - 16$ B) $x^2 - 8$ C) $x^2 - 16$ D) $x^2 - 8x - 16$

Answer: C

239) $(13x + 10)(13x - 10)$

A) $169x^2 - 260x - 100$ B) $x^2 - 100$

C) $169x^2 + 260x - 100$ D) $169x^2 - 100$

Answer: D

240) $(x + 12)^2$

A) $144x^2 + 24x + 144$ B) $x + 144$ C) $x^2 + 144$ D) $x^2 + 24x + 144$

Answer: D

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241) $(x - 5)^2$

A) $x^2 - 10x + 25$ B) $x + 25$ C) $25x^2 - 10x + 25$ D) $x^2 + 25$

Answer: A

242) $(4x + 7)^2$

A) $4x^2 + 56x + 49$ B) $16x^2 + 56x + 49$ C) $16x^2 + 49$ D) $4x^2 + 49$

Answer: B

243) $(x + 11y)(x - 11y)$

A) $x^2 - 22y^2$ B) $x^2 - 22xy - 121y^2$ C) $x^2 - 121y^2$ D) $x^2 + 22xy - 121y^2$

Answer: C

244) $(13y + x)(13y - x)$

A) $169y^2 - x^2$ B) $169y^2 + 26xy - x^2$ C) $169y^2 - 26xy - x^2$ D) $26y^2 - x^2$

Answer: A

245) $(3x - 8)^2$

A) $3x^2 + 64$ B) $3x^2 - 48x + 64$ C) $9x^2 - 48x + 64$ D) $9x^2 + 64$

Answer: C

246) $(b - x)^2$

A) $b^2 - 2bx + x^2$ B) $b^2 + 2bx + x^2$ C) $b^2 - bx + x^2$ D) $b^2 - 2bx - x^2$

Answer: A

247) $(3x + 2y)^2$

A) $3x^2 + 4y^2$ B) $9x^2 + 4y^2$ C) $3x^2 + 12xy + 4y^2$ D) $9x^2 + 12xy + 4y^2$

Answer: D

248) $(3x - 11y)^2$

A) $9x^2 + 121y^2$ B) $3x^2 + 121y^2$

C) $3x^2 - 66xy + 121y^2$ D) $9x^2 - 66xy + 121y^2$

Answer: D

249) $(x - 4)^3$

A) $x^3 - 12x^2 + 48x - 64$ B) $x^3 - 12x^2 + 24x - 64$

C) $x^3 - 12x^2 + 12x - 64$ D) $x^3 - 4x^2 + 24x - 64$

Answer: A

250) $(3x + 2)^3$

A) $9x^2 + 12x + 4$ B) $27x^3 + 54x^2 + 54x + 8$

C) $9x^6 + 6x^3 + 64$ D) $27x^3 + 54x^2 + 36x + 8$

Answer: D

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Find the quotient and the remainder.

251) $15x^7 - 25x^5$ divided by $5x$

A) $3x^8 - 5x^6$; remainder 0
B) $3x^7 - 5x^5$; remainder 0
C) $3x^6 - 5x^4$; remainder 0
D) $15x^6 - 25x^4$; remainder 0

Answer: C

252) $30x^2 + 36x - 11$ divided by $6x$

A) $5x^2 + 6x - \frac{11}{6}$; remainder 0
B) $5x - 5$; remainder 0
C) $5x + 6$; remainder -11
D) $30x + 36$; remainder -11

Answer: C

253) $x^2 + 16x + 64$ divided by $x + 8$

A) $x + 8$; remainder 0
B) $x - 56$; remainder 0
C) $x^3 - 56$; remainder 0
D) $x^2 + 8$; remainder 0

Answer: A

254) $5x^2 + 3x - 14$ divided by $x + 2$

A) $5x - 7$; remainder 0
B) $5x + 7$; remainder 0
C) $5x - 7$; remainder 8
D) $x - 7$; remainder 0

Answer: A

255) $x^2 + 2x - 41$ divided by $x + 8$

A) $x - 6$; remainder 7
B) $x + 6$; remainder 7
C) $x - 7$; remainder 6
D) $x - 6$; remainder 0

Answer: A

256) $x^2 + 16x + 54$ divided by $x + 7$

A) $x + 9$; remainder 0
B) $x + 9$; remainder -9
C) $x + 10$; remainder 0
D) $x + 9$; remainder 9

Answer: B

257) $4x^3 + 20x^2 - 53x + 21$ divided by $x + 7$

A) $4x^2 - 8x + 3$; remainder 0
B) $x^2 + 8x + 4$; remainder 0
C) $4x^2 + 8x + 3$; remainder 0
D) $x^2 + 9x + 10$; remainder 0

Answer: A

258) $12x^3 + 11x^2 + 10x - 3$ divided by $-3x + 1$

A) $-4x^2 - 5x - 5$; remainder 2
B) $-4x^2 - 5x - 5$; remainder 5
C) $-4x^2 - 5x - 5$; remainder 0
D) $x^2 - 5$; remainder -5

Answer: A

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259) $5x^3 - 7x^2 + 7x - 8$ divided by $5x - 2$

A) $x^2 + x - 1$; remainder -6

B) $x^2 - x + 1$; remainder 6

C) $x^2 - x + 1$; remainder -6

D) $x^2 - x + 1$; remainder 10

Answer: C

260) $x^4 + 81$ divided by $x - 3$

A) $x^3 - 3x^2 + 9x - 27$; remainder 162

B) $x^3 + 3x^2 + 9x + 27$; remainder 81

C) $x^3 + 3x^2 + 9x + 27$; remainder 162

D) $x^3 + 3x^2 + 9x + 27$; remainder 0

Answer: C

261) $-15x^3 + 7x^2 - 2x + 5$ divided by $-3x - 1$

A) $5x^2 - 4x + 2$; remainder 10

B) $5x^2 - 4x + 2$; remainder 7

C) $x^2 + 2$; remainder -4

D) $5x^2 - 4x + 2$; remainder 0

Answer: B

262) $12x^3 - 2x^2 + 5x + 11$ divided by $3x - 2$

A) $4x^2 + 2x + 3$; remainder 17

B) $4x^2 + 2x + 3$; remainder 20

C) $x^2 + 3$; remainder 2

D) $4x^2 + 2x + 3$; remainder 0

Answer: A

263) $x^4 + 7x^2 + 9$ divided by $x^2 + 1$

A) $x^2 + 6$; remainder 3

B) $x^2 + 6$; remainder 0

C) $x^2 + 6x + 1$; remainder 0

D) $x^2 + 6x + \frac{3}{2}$; remainder 3

Answer: A

264) $x^4 + 81$ divided by $x - 3$

A) $x^3 + 3x^2 + 9x + 27$; remainder 162

B) $x^3 - 3x^2 + 9x - 27$; remainder 162

C) $x^3 + 3x^2 + 9x + 27$; remainder 0

D) $x^3 + 3x^2 + 9x + 27$; remainder 81

Answer: A

265) $x^2 - 169a^2$ divided by $x - 13a$

A) $x^2 + 26xa$ B) $x - 13a$ C) $x + 13a$ D) $x^2 - 26xa$

Answer: C

Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

266) $(x - 11y)(x - 12y)$

A) $x - 23xy + 132y$ B) $x^2 - 23xy + 132y^2$ C) $x^2 - 26xy + 132y^2$ D) $x^2 - 23xy - 23y^2$

Answer: B

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267) $(2x + 3y)(-4x - 4y)$

A) $-8x^2 - 8xy - 12y^2$ B) $-8x^2 - 12xy - 12y^2$

C) $-8x^2 - 20xy - 20y^2$ D) $-8x^2 - 20xy - 12y^2$

Answer: D

Multiply the polynomials using the special product formulas. Express the answer as a single polynomial in standard form.

268) $(x + 5y)(x - 5y)$

A) $x^2 - 10xy - 25y^2$ B) $x^2 - 25y^2$ C) $x^2 + 10xy - 25y^2$ D) $x^2 - 10y^2$

Answer: B

269) $(9x + y)(9x - y)$

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

Answer: A

270) $(3x + 11y)(3x - 11y)$

A) $9x^2 + 66xy - 121y^2$ B) $6x^2 - 22y^2$

C) $9x^2 - 121y^2$ D) $9x^2 - 66xy - 121y^2$

Answer: C

271) $(x - y)^2$

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

Answer: A

272) $(x - 3y)^2$

A) $x^2 - y^2$ B) $x^2 - 3xy + 9y^2$ C) $x^2 + 6xy + 9y^2$ D) $x^2 - 6xy + 9y^2$

Answer: D

273) $(4x - y)^2$

A) $16x^2 - 8xy + y^2$ B) $16x^2 + y^2$ C) $16x^2 - 4xy + y^2$ D) $16x^2 - 8xy - 2y^2$

Answer: A

274) $(6x + 5y)^2$

A) $36x^2 + 60xy + 25y^2$ B) $6x^2 + 60xy + 25y^2$

C) $36x^2 + 25y^2$ D) $6x^2 + 25y^2$

Answer: A

275) $(7x - 6y)^2$

A) $49x^2 - 84xy + 36y^2$ B) $7x^2 - 84xy + 36y^2$

C) $7x^2 + 36y^2$ D) $49x^2 + 36y^2$

Answer: A

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Factor the polynomial by removing the common monomial factor.

276) $2x - 12$

A) $2(x + 6)$ B) $x(x - 2)$ C) $2(x - 6)$ D) $x(x + 2)$

Answer: C

277) $3x^2 - 24x$

A) $3x(x + 8)$ B) $3(x^2 - 8x)$ C) $3x^2(x - 8)$ D) $3x(x - 8)$

Answer: D

Factor the difference of two squares.

278) $x^2 - 36$

A) $(x^2 + 6)(x^2 - 6)$ B) $(x - 6)(x - 6)$ C) $(x + 6)(x - 6)$ D) $(x + 36)(x - 36)$

Answer: C

279) $4x^2 - 1$

A) $(2x + 1)^2$ B) $(2x - 1)^2$ C) prime D) $(2x - 1)(2x + 1)$

Answer: D

280) $36 - x^2$

A) $(6 + x)^2$ B) $(6 - x)^2$ C) prime D) $(6 - x)(6 + x)$

Answer: D

281) $81x^2 - 16$

A) $(9x - 4)^2$ B) $(9x + 4)(9x - 4)$ C) $(9x + 4)^2$ D) $(81x + 1)(x - 16)$

Answer: B

Factor the sum or difference of two cubes.

282) $x^3 - 216$

A) $(x - 6)(x^2 + 6x + 36)$ B) $(x - 6)(x^2 + 36)$

C) $(x + 216)(x^2 - 1)$ D) $(x + 6)(x^2 - 6x + 36)$

Answer: A

283) $x^3 + 216$

A) $(x + 6)(x^2 + 36)$ B) $(x - 6)(x^2 + 6x + 36)$

C) $(x - 216)(x^2 - 1)$ D) $(x + 6)(x^2 - 6x + 36)$

Answer: D

284) $64y^3 - 1$

A) $(64y - 1)(y^2 + 4y + 1)$ B) $(4y - 1)(16y^2 + 1)$

C) $(4y + 1)(16y^2 - 4y + 1)$ D) $(4y - 1)(16y^2 + 4y + 1)$

Answer: D

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285) $8x^3 + 1$

A) $(2x + 1)(4x^2 + 2x + 1)$ B) $(2x + 1)(4x^2 + 1)$

C) $(2x + 1)(4x^2 - 2x - 1)$ D) $(2x + 1)(4x^2 - 2x + 1)$

Answer: D

286) $512 - x^3$

A) $(8 + x)(64 - 8x + x^2)$ B) $(8 - x)(64 + x^2)$

C) $(8 - x)(64 + 8x + x^2)$ D) $(8 + x)(64 - x^2)$

Answer: C

287) $512x^3 - 343$

A) $(8x + 7)(64x^2 - 56x + 49)$ B) $(512x - 7)(x^2 + 56x + 49)$

C) $(8x - 7)(64x^2 + 56x + 49)$ D) $(8x - 7)(64x^2 + 49)$

Answer: C

288) $343x^3 + 1000$

A) $(343x - 10)(x^2 + 70x + 100)$ B) $(7x - 10)(49x^2 + 70x + 100)$

C) $(7x + 10)(49x^2 + 70x + 100)$ D) $(7x + 10)(49x^2 - 70x + 100)$

Answer: D

289) $27 - 125x^3$

A) $(3 + 5x^2)(9 - 15x + 25x^2)$ B) $(3 - 5x)(9 + 15x + 25x^2)$

C) $(3 - 5x)(9 + 25x^2)$ D) $(27 - 5x)(1 + 15x + 25x^2)$

Answer: B

Factor completely. If the polynomial cannot be factored, say it is prime.

290) $3x^2 - 108$

A) $3(x + 6)(x - 6)$ B) $3(x + 6)^2$ C) $3(x - 6)^2$ D) prime

Answer: A

291) $x^4 - 64$

A) $(x^2 + 8)(x^2 - 8)$ B) $(x^2 - 8)^2$ C) prime D) $(x^2 + 8)^2$

Answer: A

292) $x^4 - 256$

A) prime B) $(x^2 + 16)^2$

C) $(x^2 - 16)^2$ D) $(x^2 + 16)(x + 4)(x - 4)$

Answer: D

293) $(x + 10)^2 - 49$

A) $x^2 + 20x + 51$ B) $(x + 59)(x - 39)$ C) $(x - 3)(x - 17)$ D) $(x + 17)(x + 3)$

Answer: D

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294) $(x - 3)^2 - 4$

A) $(x - 5)^2$ B) $(x + 1)(x - 7)$ C) $(x - 1)(x - 5)$ D) $(x + 1)(x + 5)$

Answer: C

295) $x^9 + 1$

A) $(x - 1)(x + 1)(x^6 - x^3 + 1)$ B) $(x - 1)(x^2 + x + 1)(x^6 + x^3 + 1)$

C) $(x + 1)(x^2 - x + 1)(x^6 - x^3 + 1)$ D) $(x^3 + 1)(x^6 - x^3 + 1)$

Answer: C

296) $1000x^4 - x$

A) $x(1000x - 1)(x^2 + 10x + 1)$ B) $x(10x - 1)(100x^2 + 1)$

C) $x(10x - 1)(100x^2 + 10x + 1)$ D) $x(10x + 1)(100x^2 - 10x + 1)$

Answer: C

297) $(3x + 4)^3 + 216$

A) $(3x + 10)(9x^2 + 42x + 28)$ B) $(3x - 2)(9x^2 + 42x + 76)$

C) $(3x + 10)(9x^2 + 6x + 28)$ D) $(3x + 10)(9x^2 + 42x + 76)$

Answer: C

298) $(11 - x)^3 - x^3$

A) $(11 - x)(x^2 - 11x + 121)$ B) $(11 - 2x)(x^2 - 11x + 121)$

C) $(11 - 2x)(3x^2 - 11x + 121)$ D) $(11 + 2x)(x^2 - 11x + 121)$

Answer: B

Factor the perfect square.

299) $x^2 + 50x + 625$

A) $(x - 25)^2$ B) $(x + 25)(x - 25)$ C) $(x + 25)^2$ D) $x^2 + 50x + 625$

Answer: C

300) $x^2 + 2x + 1$

A) $(x - 1)^2$ B) $(x + 1)(x - 1)$ C) $(x + 2)(x - 2)$ D) $(x + 1)^2$

Answer: D

301) $49x^2 - 56x + 16$

A) $(7x - 4)^2$ B) $(7x + 4)(7x - 4)$ C) $(7x - 5)^2$ D) $(7x + 4)^2$

Answer: A

302) $25x^2 + 90x + 81$

A) $(5x - 10)^2$ B) $(5x - 9)^2$ C) $(5x + 9)(5x - 9)$ D) $(5x + 9)^2$

Answer: D

303) $x^4 + 12x^2 + 36$

A) $(x^2 + 6)^2$ B) $(x + 6)^2$ C) $(x + 6)(x - 6)$ D) $(x^2 - 6)^2$

Answer: A

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Factor completely. If the polynomial cannot be factored, say it is prime.

304) $75x^2 - 60x + 12$

A) $3(5x - 2)(5x + 2)$ B) $3(5x + 2)^2$ C) $3(5x - 2)^2$ D) prime

Answer: C

305) $x^3 + 20x^2 + 100x$

A) $x(x + 10)(x - 10)$ B) $x(x + 10)^2$ C) $x(x - 10)^2$ D) prime

Answer: B

Factor the polynomial.

306) $x^2 - x - 6$

A) $(x + 2)(x - 3)$ B) $(x + 1)(x - 6)$ C) $(x + 3)(x - 2)$ D) prime

Answer: A

307) $x^2 - 9x + 14$

A) $(x + 2)(x - 7)$ B) $(x + 2)(x + 1)$ C) $(x - 2)(x - 7)$ D) prime

Answer: C

308) $x^2 + 4x - 21$

A) $(x - 7)(x + 1)$ B) $(x + 7)(x - 3)$ C) $(x - 7)(x + 3)$ D) prime

Answer: B

309) $x^2 + 144$

A) $(x + 12)^2$ B) $(x - 12)^2$ C) $(x + 12)(x - 12)$ D) prime

Answer: D

Factor completely. If the polynomial cannot be factored, say it is prime.

310) $3x^2 - 3x - 18$

A) $(3x + 6)(x - 3)$ B) $3(x - 2)(x + 3)$ C) $3(x + 2)(x - 3)$ D) prime

Answer: C

311) $5x^2 - 40x + 75$

A) $5(x - 15)(x + 1)$ B) $5(x - 5)(x - 3)$ C) $(x - 5)(5x - 15)$ D) prime

Answer: B

312) $5x^3 + 5x^2 - 100x$

A) $(5x^2 + 20x)(x - 5)$ B) $5x(x - 4)(x + 5)$ C) $5x(x + 4)(x - 5)$ D) $(x - 4)(5x^2 + 25)$

Answer: B

313) $(x + 2)^2 - 13(x + 2) + 42$

A) $(x - 4)(x - 5)$ B) $(x^2 + 2x - 6)(x^2 + 2x - 7)$

C) $(x + 8)(x + 9)$ D) $(x^2 - 2x + 6)(x^2 - 2x + 7)$

Answer: A

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314) $x^4 - 3x^2 - 18$

A) $(x^2 + 6)(x^2 + 3)$ B) $(x^2 - 6)(x^2 + 3)$ C) $(x^2 + 6)(x^2 + 1)$ D) Prime

Answer: B

Factor the polynomial by grouping.

315) $x^2 + 7x + 6x + 42$

A) $(x - 7)(x - 6)$ B) $(x - 7)(x + 6)$ C) $(x + 7)(x + 6)$ D) prime

Answer: C

316) $2x^2 + 7x + 14x + 49$

A) $(2x + 7)(2x + 7)$ B) $(2x + 7)(7x + 2)$ C) $(x + 7)(2x + 7)$ D) prime

Answer: C

317) $6x^2 + 9x + 4x + 6$

A) $(6x + 2)(x + 3)$ B) $(3x + 2)(2x + 3)$ C) $(3x - 2)(2x - 3)$ D) $(6x - 2)(x - 3)$

Answer: B

318) $15x^2 - 25x - 18x + 30$

A) $(15x + 6)(x + 5)$ B) $(15x - 6)(x - 5)$ C) $(5x - 6)(3x - 5)$ D) $(5x + 6)(3x + 5)$

Answer: C

Factor completely. If the polynomial cannot be factored, say it is prime.

319) $x^3 - 9x + 6x^2 - 54$

A) $(x + 3)(x - 3)(x + 6)$ B) $(x - 3)^2(x + 6)$

C) $(x^2 - 9)(x + 6)$ D) prime

Answer: A

320) $4x^2 - 28x - 8x + 56$

A) $(x - 7)(4x - 8)$ B) $4(x + 7)(x + 2)$ C) $(x - 7)(x - 2)$ D) $4(x - 7)(x - 2)$

Answer: D

321) $2y^3 + 8y^2 - 6y^2 - 24y$

A) $(y + 4)(2y^2 - 6y)$ B) $2y(y - 4)(y + 3)$ C) $2y(y + 4)(y - 3)$ D) $(y + 4)(y - 3)$

Answer: C

322) $8x^6 - 6x^3 - 20x^3 + 15$

A) $(2x^3 + 5)(4x^3 + 3)$ B) $(2x^3 - 5)(4x^3 - 3)$ C) $(8x^3 + 5)(x^3 + 3)$ D) $(2x^6 - 5)(4x - 3)$

Answer: B

323) $12x^2 + 18xy + 10xy + 15y^2$

A) $(6x + 5y)(2x + 3y)$ B) $(12x + 5y)(x + 3y)$ C) $(6x + 5)(2x + 3)$ D) $(6x - 5y)(2x + 3y)$

Answer: A

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324) $15x^3 - 20x^2y - 18xy^2 + 24y^3$

A) $(5x^2 + 6y^2)(3x + 4y)$ B) $(15x^2 - 6y^2)(x - 4y)$

C) $(5x^2 - 6y)(3x - 4y)$ D) $(5x^2 - 6y^2)(3x - 4y)$

Answer: D

An expression that occurs in calculus is given. Factor completely.

325) $2(x + 6)(x - 5)^3 + (x + 6)^2 \cdot 6(x - 5)^2$

A) $(x + 6)(x - 5)^2(4x + 13)$ B) $(x + 6)(x - 5)^2(8x + 26)$

C) $2(x + 5)(x - 6)^2(4x + 13)$ D) $2(x + 6)(x - 5)^2(4x + 13)$

Answer: D

326) $(2x + 1)^2 + 3(2x + 1) - 4$

A) $2x(2x + 1)$ B) $2x - 1$ C) $2x - 6$ D) $2x(2x + 5)$

Answer: D

327) $3(x + 5)^2(2x - 1)^2 + 4(x + 5)^3(2x - 1)$

A) $(x + 5)^2(2x - 1)(x + 17)$ B) $(x + 5)^2(10x + 17)$

C) $(x + 5)^2(2x - 1)(10x + 17)$ D) $(x + 5)(2x - 1)(10x + 17)$

Answer: C

Factor the polynomial.

328) $6x^2 + 13x + 6$

A) $(6x + 2)(x + 3)$ B) $(3x + 2)(2x + 3)$ C) $(3x - 2)(2x - 3)$ D) prime

Answer: B

329) $20y^2 + 27y + 9$

A) $(4y + 3)(5y + 3)$ B) $(20y + 3)(y + 3)$ C) $(4y - 3)(5y - 3)$ D) prime

Answer: A

330) $10z^2 + 7z - 12$

A) $(2z + 3)(5z - 4)$ B) $(10z + 3)(z - 4)$ C) $(2z - 3)(5z + 4)$ D) prime

Answer: A

331) $9z^2 - 6z - 8$

A) $(3z + 4)(3z - 2)$ B) $(9z - 4)(z + 2)$ C) $(3z - 4)(3z + 2)$ D) prime

Answer: C

332) $4x^2 - 12xt + 9t^2$

A) $(4x - 3t)(x - 3t)$ B) $(2x + 3t)(2x + 3t)$ C) $(2x - 3t)(2x - 3t)$ D) prime

Answer: C

333) $15z^2 - 14z - 8$

A) $(15z - 4)(z + 2)$ B) $(3z + 4)(5z - 2)$ C) $(3z - 4)(5z + 2)$ D) prime

Answer: C

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334) $x^2 - x - 45$

A) $(x + 5)(x - 9)$ B) $(x - 5)(x + 9)$ C) $(x - 45)(x + 1)$ D) prime

Answer: D

Factor completely. If the polynomial cannot be factored, say it is prime.

335) $12x^2 - 52x - 40$

A) $(12x + 8)(x - 5)$ B) $4(3x - 2)(x + 5)$ C) $4(3x + 2)(x - 5)$ D) prime

Answer: C

336) $10x^2 - 35x - 20$

A) $5(2x + 1)(x - 4)$ B) $(10x - 5)(x + 4)$ C) $5(2x - 1)(x + 4)$ D) prime

Answer: A

337) $6y^2 + 27y - 15$

A) $3(2y - 1)(y + 5)$ B) $(6y - 3)(y + 5)$ C) $3(2y + 1)(y - 5)$ D) prime

Answer: A

338) $21x^2 - 69x + 18$

A) $(7x - 2)(3x - 3)$ B) $3(7x - 2)(x - 3)$ C) $3(7x + 2)(x + 3)$ D) prime

Answer: B

339) $20x^3 + 33x^2 + 10x$

A) $x(5x + 5)(4x + 2)$ B) $x^2(4x + 5)(5x + 2)$ C) $(4x^2 + 5)(5x + 2)$ D) $x(4x + 5)(5x + 2)$

Answer: D

340) $24x^2 + 54x + 27$

A) $(2x + 1)(4x + 9)$ B) $3(2x + 3)(4x + 3)$ C) $3(2x + 1)(4x + 9)$ D) $3(9x + 3)(x + 3)$

Answer: B

341) $15(x - 7)^2 - 8(x - 7) - 16$

A) $(3x + 11)(5x + 11)$ B) $(3x + 25)(5x + 39)$ C) $(3x - 25)(5x - 31)$ D) $(3x + 4)(5x + 4)$

Answer: C

342) $9x^4 + 18x^2 + 8$

A) $(3x^2 - 2)(3x^2 - 4)$ B) $(3x^2 + 4)(3x^2 + 2)$ C) $(3x^2 + 1)(3x^2 + 8)$ D) $(9x^2 + 4)(x^2 + 2)$

Answer: B

343) $9x^4 - 3x^2 - 20$

A) $(9x^2 - 5)(x^2 + 4)$ B) $(3x^2 + 1)(3x^2 - 20)$ C) $(3x - 4)(3x + 5)$ D) $(3x^2 - 5)(3x^2 + 4)$

Answer: D

344) $8x^6 - 6x^3 - 9$

A) $(4x^3 + 1)(2x^3 - 9)$ B) $(4x^3 + 3)(2x^3 - 3)$ C) $(2x^3 + 3)(4x^3 - 3)$ D) $8(x^3 - 3)(x^3 + 3)$

Answer: B

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345) $3y^6 - 25y^3 + 42$

A) $(3y^3 - 6y^2 + y - 7)(y^3 - 7y^2 + y - 6)$ B) $y^4(3y - 7)(y - 6)$

C) $(3y^3 - 7)(y^3 - 6)$ D) $y^2(3y^2 - 7)(y^2 - 6)$

Answer: C

What number should be added to complete the square of the expression?

346) $x^2 + 18x$

A) 162 B) 81 C) 9 D) 41

Answer: B

347) $x^2 - 18x$

A) –9 B) 41 C) 81 D) 162

Answer: C

348) $x^2 + \frac{5}{6}x$

A) $\frac{25}{36}$ B) $\frac{25}{72}$ C) $\frac{1}{6}$ D) $\frac{25}{144}$

Answer: D

349) $x^2 - \frac{4}{5}x$

A) $-\frac{1}{5}$ B) $\frac{16}{25}$ C) $-\frac{8}{25}$ D) $\frac{4}{25}$

Answer: D

350) $x^2 - x$

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

Answer: A

Use synthetic division to find the quotient and the remainder.

351) $x^2 + 11x + 20$ is divided by $x + 7$

A) $x + 4$; remainder 0 B) $x + 4$; remainder 8

C) $x + 4$; remainder –8 D) $x + 5$; remainder 0

Answer: C

352) $x^3 - x^2 + 3$ is divided by $x + 2$

A) $x^2 + x + 2$; remainder –9 B) $x^2 - 3x + 6$; remainder –9

C) $x^2 - 3x + 6$; remainder 2 D) $3x^2 - 4x + 2$; remainder 0

Answer: B

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353) $x^5 + x^2 - 2$ is divided by $x - 2$

A) $x^4 + 3$; remainder 4

B) $x^4 + 2x^3 + 4x^2 + 9x + 18$; remainder 34

C) $x^4 + 2x^3 + 5x^2 + 10x + 20$; remainder 38

D) $x^4 + 3x^2$; remainder 4

Answer: B

354) $-5x^3 - 19x^2 - 9x + 9$ is divided by $x + 3$

A) $-\frac{5}{3}x^2 - \frac{19}{3}x - 3$; remainder 0

B) $-5x^2 x - \frac{19}{3} + 3$; remainder 0

C) $-5x^2 - 4x + 3$; remainder 0

D) $5x^2 - 3x + 3$; remainder 0

Answer: C

355) $x^5 - 3x^4 - 7x^3 - 12x^2 - 18x + 18$ is divided by $x - 5$

A) $x^3 + 2x^2 + 3x + 3$; remainder 3

B) $x^4 + 2x^3 + 3x^2 + 3x - 3$; remainder 3

C) $x^4 + 2x^3 + 3x^2 + 3x + 3$; remainder 0

D) $x^4 + 2x^3 + 3x^2 + 3x + 3$; remainder 5

Answer: B

356) $x^4 - 3$ is divided by $x - 2$

A) $x^3 + 2x^2 + 4x + 8$; remainder 79

B) $x^3 + 6x^2 + 4x + 2$; remainder 13

C) $x^3 + 3x^2 + 9x + 27$; remainder 79

D) $x^3 + 2x^2 + 4x + 8$; remainder 13

Answer: D

357) $x^4 + 625$ is divided by $x - 5$

A) $x^3 - 5x^2 + 25x - 125$; remainder 1250

B) $x^3 + 5x^2 + 25x + 125$; remainder 0

C) $x^3 + 5x^2 + 25x + 125$; remainder 625

D) $x^3 + 5x^2 + 25x + 125$; remainder 1250

Answer: D

358) $6x^5 - 5x^4 + x - 4$ is divided by $x + \frac{1}{2}$

A) $6x^4 - 2x^3 + x^2 - \frac{1}{2}x + \frac{5}{4}$; remainder $-\frac{37}{8}$

B) $6x^4 - 8x^3 + 4x^2 - 2x + 2$; remainder -5

C) $6x^4 - 8x^3 + 5$; remainder $-\frac{13}{2}$

D) $6x^4 - 2x^3 - x^2 + \frac{1}{2}x + \frac{5}{4}$; remainder $-\frac{27}{8}$

Answer: B

Use synthetic division to determine whether $x - c$ is a factor of the given polynomial.

359) $x^3 - 9x^2 + 23x - 15$; $x - 5$

A) Yes

B) No

Answer: A

360) $x^3 + 9x^2 + 14x - 24$; $x - 3$

A) Yes

B) No

Answer: B

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361) $x^3 - 5x^2 - 22x + 56$; $x + 4$

A) Yes B) No

Answer: A

362) $x^3 - 11x^2 + 12x + 80$; $x + 6$

A) Yes B) No

Answer: B

363) $4x^3 - 17x^2 + 23x - 10$; $x - 5$

A) Yes B) No

Answer: B

364) $3x^3 - 27x^2 + 6x + 144$; $x + 4$

A) Yes B) No

Answer: B

365) $2x^3 - 9x^2 - 15x + 50$; $x - 5$

A) Yes B) No

Answer: A

366) $2x^3 - 11x^2 - 16x + 60$; $x - 6$

A) Yes B) No

Answer: A

367) $6x^5 - 5x^4 + x - 4$; $x + \frac{1}{2}$

A) Yes B) No

Answer: B

Reduce the rational expression to lowest terms.

368) $\frac{x^2 - 49}{x - 7}$

A) $\frac{1}{x - 7}$ B) $\frac{1}{x + 7}$ C) $x + 7$ D) $x - 7$

Answer: C

369) $\frac{3x + 3}{15x^2 + 24x + 9}$

A) $\frac{1}{5x + 3}$ B) $\frac{3x + 3}{15x^2 + 24x + 9}$ C) $\frac{3x}{5x + 3}$ D) $\frac{3x + 5}{5x + 24}$

Answer: A

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370) $\frac{y^2 + 4y + 4}{y^2 + 7y + 10}$

A) $-\frac{y^2 + 4y + 4}{y^2 + 7y + 10}$ B) $\frac{4y + 2}{7y + 5}$ C) $\frac{4y + 4}{7y + 10}$ D) $\frac{y + 2}{y + 5}$

Answer: D

371) $\frac{2x^2 - 14x + 24}{x - 4}$

A) $\frac{1}{x - 4}$ B) $2x - 6$ C) $\frac{2x^2 - 14x + 24}{x - 4}$ D) $2x^2 - 20$

Answer: B

372) $\frac{x^2 + 9x + 18}{x^2 + 14x + 48}$

A) $\frac{9x + 3}{14x + 8}$ B) $\frac{x + 3}{x + 8}$ C) $-\frac{x^2 + 9x + 18}{x^2 + 14x + 48}$ D) $\frac{9x + 18}{14x + 48}$

Answer: B

373) $\frac{4x^2 - 13x - 12}{3x^2 - 17x + 20}$

A) $\frac{x + 4}{x - 4}$ B) $\frac{4x - 4}{3x + 4}$ C) $\frac{x - 3}{x + 5}$ D) $\frac{4x + 3}{3x - 5}$

Answer: D

374) $\frac{6x^2 + 18x^3}{5x + 15x^2}$

A) $\frac{6}{5}$ B) $\frac{6x}{5}$ C) $\frac{6x^2 + 18x^3}{5x + 15x^2}$ D) $\frac{6 + 18x^3}{5x + 15}$

Answer: B

375) $\frac{y^3 - 8}{y - 2}$

A) $y^2 - 4$ B) $\frac{y^3 - 8}{y - 2}$ C) $y^2 + 2y + 4$ D) $\frac{1}{y - 2}$

Answer: C

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An expression that occurs in calculus is given. Reduce the expression to lowest terms.

376) $\dfrac{(x^2 + 6) \cdot 4 - (4x + 5) \cdot 7x}{(x^2 + 6)^3}$

A) $\dfrac{-24x^2 - 35x + 24}{(x^2 + 6)^3}$ B) $\dfrac{-32x^2 - 35x + 24}{(x^2 + 6)^3}$ C) $\dfrac{-28x^2 - 35x + 4}{(x^2 + 6)^2}$ D) $\dfrac{24x^2 + 35x - 24}{(x^2 + 6)^3}$

Answer: A

377) $\dfrac{(2x + 5)4x - 2x^2(2)}{(2x + 5)^2}$

A) $\dfrac{4(x + 5)}{(2x + 5)^2}$ B) $\dfrac{2x}{(x + 5)^2}$ C) $\dfrac{4x}{(2x + 5)^2}$ D) $\dfrac{4x(x + 5)}{(2x + 5)^2}$

Answer: D

Perform the indicated operations and simplify the result. Leave the answer in factored form.

378) $\dfrac{7x}{14x + 7} \cdot \dfrac{10x + 5}{4}$

A) $\dfrac{5x}{4}$ B) $\dfrac{5x}{28}$ C) $\dfrac{5}{4}$ D) $\dfrac{x}{4}$

Answer: A

379) $\dfrac{4x - 4}{x} \cdot \dfrac{9x^2}{7x - 7}$

A) $\dfrac{28x^2 + 56x + 28}{9x^3}$ B) $\dfrac{7}{36x}$ C) $\dfrac{36x^3 - 36x^2}{7x^2 - 7x}$ D) $\dfrac{36x}{7}$

Answer: D

380) $\dfrac{x^3 + 1}{x^3 - x^2 + x} \cdot \dfrac{2x}{-14x - 14}$

A) $\dfrac{x + 1}{7(-x - 1)}$ B) $-\dfrac{1}{7}$ C) $-\dfrac{x^2 + 1}{7}$ D) $-\dfrac{x^3 + 1}{7(x + 1)}$

Answer: B

381) $\dfrac{x^2 + 17x + 72}{x^2 + 13x + 36} \cdot \dfrac{x^2 + 7x + 12}{x^2 + 11x + 24}$

A) $\dfrac{x + 4}{x + 3}$ B) 1 C) $\dfrac{1}{x + 3}$ D) $\dfrac{x + 8}{x + 4}$

Answer: B

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382) $\frac{x^2 - 13x + 12}{x^2 - 11x + 28} \cdot \frac{x^2 - 15x + 44}{x^2 - 20x + 96}$

A) $\frac{(x - 1)(x - 11)}{(x - 7)(x - 8)}$

B) $\frac{(x + 1)(x + 11)}{(x + 7)(x + 8)}$

C) $\frac{(x - 1)}{(x - 8)}$

D) $\frac{(x^2 - 13x + 12)(x^2 - 15x + 44)}{(x^2 - 11x + 28)(x^2 - 20x + 96)}$

Answer: A

383) $\frac{x^2 + 7x + 12}{x^2 + 8x + 16} \cdot \frac{x^2 + 4x}{x^2 - 2x - 15}$

A) $\frac{1}{x - 5}$

B) $\frac{x}{x - 5}$

C) $\frac{x}{x^2 + 8x + 16}$

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

Answer: B

384) $\frac{9x^4 - 72x}{3x^2 - 12} \cdot \frac{x^2 + x - 2}{4x^3 + 8x^2 + 16x}$

A) $\frac{3x(x + 1)}{4}$

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

C) $\frac{3x(x - 1)}{4}$

D) $\frac{3(x - 1)}{4}$

Answer: D

385) $\frac{x^2 + 9x + 20}{x^2 + 11x + 30} \cdot \frac{x^2 + 6x}{x^2 + 7x + 12}$

A) $\frac{x}{x^2 + 11x + 30}$

B) $\frac{x}{x + 3}$

C) $\frac{x^2 + 6x}{x + 3}$

D) $\frac{1}{x + 3}$

Answer: B

386) $\frac{10x^2 - 3x - 4}{5x^2 - x - 4} \cdot \frac{15x^2 + 12x}{1 - 4x^2}$

A) $\frac{3x(5x + 4)}{(1 - 2x)(x - 1)}$

B) $\frac{3x(5x - 4)}{(1 - 2x)(x - 1)}$

C) $\frac{3x}{(1 - 2x)(x - 1)}$

D) $\frac{(5x + 4)(5x - 4)}{(1 - 2x)(x - 1)}$

Answer: B

387) $\dfrac{\frac{33x - 33}{10}}{\frac{11x - 11}{30}}$

A) $\frac{363(x - 1)^2}{300}$

B) $\frac{3(33x - 33)}{11x - 11}$

C) $\frac{1}{9}$

D) 9

Answer: D

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388)

$$\frac{\frac{4x - 4}{x}}{\frac{7x - 7}{4x^2}}$$

A) $\frac{28(x + 1)^2}{4x^3}$ B) $\frac{7}{16x}$ C) $\frac{16x^2(x - 1)}{7x(x - 1)}$ D) $\frac{16x}{7}$

Answer: D

389)

$$\frac{\frac{x^2 + 5x + 6}{x^2 + 8x + 15}}{\frac{x^2 + 2x}{x^2 + 9x + 20}}$$

A) $\frac{x}{(x + 5)(x + 3)}$ B) $\frac{x + 4}{x}$ C) $\frac{x + 4}{x(x + 5)}$ D) $x + 4$

Answer: B

390)

$$\frac{\frac{x^2 - 24x + 144}{11x - 132}}{\frac{10x - 120}{110}}$$

A) $\frac{(x - 12)^2}{121}$ B) 110 C) $\frac{x^2 - 24x + 144}{(x - 12)^2}$ D) 1

Answer: D

391)

$$\frac{\frac{1}{x + 6}}{\frac{3}{x^2 - 36}}$$

A) $\frac{x + 6}{3}$ B) $x - 6$ C) $\frac{x - 6}{3}$ D) $\frac{3}{x - 6}$

Answer: C

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392)

$$\frac{\frac{x^2 - 49}{x}}{\frac{x - 7}{x - 2}}$$

A) $\frac{x}{(x + 7)(x - 2)}$ B) $(x + 7)(x - 2)$ C) $\frac{(x - 7)(x^2 - 7)}{x(x - 2)}$ D) $\frac{(x + 7)(x - 2)}{x}$

Answer: D

393)

$$\frac{\frac{36x^2 - 25}{x^2 - 25}}{\frac{6x - 5}{x + 5}}$$

A) $\frac{6x + 5}{x - 5}$ B) $\frac{(6x - 5)(36x^2 - 25)}{(x^2 + 5)(x + 5)}$

C) $\frac{x - 5}{6x + 5}$ D) $\frac{6x - 5}{x + 5}$

Answer: A

394) $\frac{x}{4} - \frac{2}{7}$

A) $\frac{7x + 8}{8}$ B) $\frac{7x - 8}{28}$ C) $\frac{x - 2}{28}$ D) $\frac{x - 2}{11}$

Answer: B

395) $\frac{3x + 9}{2} - \frac{3x - 9}{2}$

A) 9 B) 81 C) 3x D) 0

Answer: A

396) $\frac{7x^2}{x - 1} - \frac{7x}{x - 1}$

A) 0 B) $\frac{7x(x + 1)}{x - 1}$ C) $\frac{7x}{x - 1}$ D) 7x

Answer: D

397) $\frac{1}{3x} - \frac{11}{12x}$

A) 1 B) $\frac{12}{-7x}$ C) $\frac{-7}{12x}$ D) $\frac{-7}{24x}$

Answer: C

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398) $\frac{9}{10x} + \frac{3}{10x}$

A) $\frac{5}{6x}$ B) $\frac{6}{5x}$ C) 1 D) $\frac{12}{20x}$

Answer: B

399) $\frac{-2x + 8}{x} + \frac{-6x - 9}{5x}$

A) $\frac{-4x + 31}{5x}$ B) $\frac{-16x + 31}{5x}$ C) $\frac{-16x + 31}{5x^2}$ D) $\frac{-16x - 49}{5x}$

Answer: B

400) $\frac{6}{x^2} - \frac{9}{x}$

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

Answer: D

401) $\frac{3}{x} + \frac{8}{x - 2}$

A) $\frac{11x - 6}{x(x - 2)}$ B) $\frac{11x - 6}{x(2 - x)}$ C) $\frac{6x - 11}{x(2 - x)}$ D) $\frac{6x - 11}{x(x - 2)}$

Answer: A

402) $\frac{2}{x + 4} - \frac{5}{x - 4}$

A) $\frac{-3}{(x + 4)(x - 4)}$ B) $\frac{-3x + 28}{(x + 4)(x - 4)}$ C) $\frac{-3x + 12}{(x + 4)(x - 4)}$ D) $\frac{-3x - 28}{(x + 4)(x - 4)}$

Answer: D

403) $\frac{24}{x - 3} + \frac{7}{x - 3}$

A) $\frac{24(x - 3)}{7(x - 3)}$ B) $\frac{17}{x - 3}$ C) $\frac{17}{x}$ D) $\frac{31}{x - 3}$

Answer: D

404) $\frac{2x^2}{x - 1} - \frac{2x}{x - 1}$

A) 0 B) $\frac{2x}{x - 1}$ C) 2x D) $\frac{2x(x + 1)}{x - 1}$

Answer: C

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405) $\frac{6 - x}{x - 7} - \frac{2x - 3}{7 - x}$

A) $-\frac{x + 9}{x - 7}$ B) $\frac{x + 9}{x - 7}$ C) $-\frac{x + 3}{x - 7}$ D) $\frac{x + 3}{x - 7}$

Answer: D

406) $\frac{x + 4}{x - 6} - \frac{x + 4}{x + 1}$

A) 0 B) $\frac{-5(x + 4)}{(x - 6)(x + 1)}$ C) $\frac{-7(x + 4)}{(x - 6)(x + 1)}$ D) $\frac{7(x + 4)}{(x - 6)(x + 1)}$

Answer: D

407) $\frac{8x}{x - 4} + \frac{5}{4 - x}$

A) $\frac{8x - 5}{4 - x}$ B) $\frac{8x - 5}{x - 4}$ C) $\frac{8x + 5}{x - 4}$ D) $\frac{3x}{x - 4}$

Answer: B

408) $\frac{x^2 - 7x}{x - 5} + \frac{10}{x - 5}$

A) $x - 2$ B) $x + 2$ C) $x + 5$ D) $x - 5$

Answer: A

Find the LCM of the given polynomials.

409) $x,\ x - 4$

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

Answer: D

410) $8x + 32,\ x^2 + 4x$

A) $8x(x + 4)$ B) $8x + 4$ C) $8x^2 + 32$ D) $8x^2 + 4$

Answer: A

411) $x^2 + 8x + 16,\ x^2 + 4x$

A) $x(x + 4)$ B) $x(x + 1)(x + 4)$ C) $(x + 4)^2$ D) $x(x + 4)^2$

Answer: D

412) $x^2 + 7x + 12,\ -4x - 12$

A) $-4(x + 4)(x + 3)$ B) $-4(x + 4)(x - 3)$ C) $-4(x - 4)(x - 3)$ D) $-4(x - 4)(x + 3)$

Answer: A

413) $x^2 + 3x - 10,\ x^2 + 6x + 5$

A) $(x + 5)(x + 1)$ B) $(x - 2)(x + 5)(x + 1)$

C) $(x + 2)(x - 5)(x + 1)$ D) $(x - 2)(x + 5)$

Answer: B

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414) $x - 8,\ 8 - x$

A) $x + 8$ B) -1 C) $(x - 8)(8 - x)$ D) $(x - 8)$ or $(8 - x)$

Answer: D

415) $10x - 17,\ 10x + 17$

A) $(10x - 17)(10x + 17)$ B) $(10x - 17)$

C) $(10x - 17)$ or $(10x + 17)$ D) $(10x + 17)$

Answer: A

416) $x^2 - 2x,\ (x - 2)^2$

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

Answer: B

417) $x^2 - 3x - 28,\ x^2 - 16,\ x^2 - 11x + 28$

A) $(x - 7)(x + 4)$ B) $(x + 7)(x + 4)(x - 4)$

C) $(x - 7)(x + 4)(x - 4)$ D) $(x + 7)(x - 4)^2$

Answer: C

Perform the indicated operations and simplify the result. Leave the answer in factored form.

418) $\frac{3}{x} + \frac{4}{x - 5}$

A) $\frac{15x - 7}{x(5 - x)}$ B) $\frac{15x - 7}{x(x - 5)}$ C) $\frac{7x - 15}{x(x - 5)}$ D) $\frac{7x - 15}{x(5 - x)}$

Answer: C

419) $-\frac{5}{81} - \frac{6}{9x}$

A) $\frac{5x - 54}{81x}$ B) $\frac{-5x + 54}{81x}$ C) $\frac{-11}{81 - 9x}$ D) $\frac{-5x - 54}{81x}$

Answer: D

420) $\frac{1}{(x + 3)(x - 3)} - \frac{3}{(x - 3)(x + 5)}$

A) $\frac{-2(x + 2)}{(x + 3)(x - 3)(x + 5)}$ B) $\frac{2(x + 2)}{(x + 3)(x - 3)(x + 5)}$

C) $\frac{-2(x + 4)}{(x + 3)(x - 3)(x + 5)}$ D) $\frac{2(2x + 7)}{(x + 3)(x - 3)(x + 5)}$

Answer: A

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421) $\frac{x-6}{x^2+5x-6}+\frac{5x-2}{x^2+14x+48}$

A) $\frac{6x^2-5x-46}{(x-6)(x+1)(x-8)}$

B) $6x-8$

C) $\frac{6x-8}{2x^2+19x+42}$

D) $\frac{6x^2-5x-46}{(x+6)(x-1)(x+8)}$

Answer: D

422) $\frac{2}{x^2-3x+2}+\frac{5}{x^2-1}$

A) $\frac{20x-8}{(x-1)(x+1)(x-2)}$

B) $\frac{7x-8}{(x-1)(x-2)}$

C) $\frac{8x-7}{(x-1)(x+1)(x-2)}$

D) $\frac{7x-8}{(x-1)(x+1)(x-2)}$

Answer: D

423) $\frac{x}{x^2-16}-\frac{3}{x^2+5x+4}$

A) $\frac{x^2-2x+12}{(x-4)(x+4)}$

B) $\frac{x^2+2x+12}{(x-4)(x+4)(x+1)}$

C) $\frac{x^2-2x+12}{(x-4)(x+4)(x+1)}$

D) $\frac{x^2-2}{(x-4)(x+4)(x+1)}$

Answer: C

424) $\frac{15}{x^2+5x}+\frac{5}{x}+\frac{3}{x+5}$

A) $\frac{8}{x}$

B) $\frac{3}{x}$

C) $\frac{15}{x}$

D) $\frac{5}{x}$

Answer: A

425) $\frac{7x}{x+1}+\frac{8}{x-1}-\frac{14}{x^2-1}$

A) $\frac{x+1}{x-1}$

B) $\frac{7x-6}{x+1}$

C) $\frac{7x-6}{x-1}$

D) $\frac{7x}{x-1}$

Answer: C

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426) $\frac{3x}{x^2 - 5x - 36} - \frac{x - 1}{x^2 - 16} + \frac{1}{x^2 - 13x + 36}$

A) $\frac{2x - 1}{(x - 9)(x - 4)}$

B) $\frac{2x - 1}{(x - 9)(x + 4)}$

C) $\frac{2x^2 - x - 5}{(x - 9)(x + 4)(x - 4)}$

D) $\frac{2x^2 - 21x + 13}{(x - 9)(x + 4)(x - 4)}$

Answer: C

427) $\dfrac{\frac{4}{x} + 4}{\frac{4}{x} - 4}$

A) $\frac{x^2}{4 - x^2}$

B) $\frac{4(1 + x)}{1 - x}$

C) $4 - x^2$

D) $\frac{1 + x}{1 - x}$

Answer: D

428) $\dfrac{1 - \frac{6}{x}}{1 + \frac{6}{x}}$

A) $x - 6$

B) $\frac{x + 6}{x - 6}$

C) $x + 6$

D) $\frac{x - 6}{x + 6}$

Answer: D

429) $\dfrac{\frac{7}{x} + 1}{\frac{7}{x} - 1}$

A) $x^2 + 7$

B) $\frac{7 + x}{7 - x}$

C) 7

D) $\frac{x^2}{x^2 + 7}$

Answer: B

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430)

$$\frac{1 - \frac{1}{x}}{9 + \frac{1}{x}}$$

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

Answer: C

431)

$$\frac{1 - \frac{2}{x}}{x - \frac{4}{x}}$$

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

Answer: A

432)

$$\frac{\frac{x}{64} - \frac{1}{x}}{1 + \frac{8}{x}}$$

A) $\frac{64}{x + 8}$ B) $\frac{64}{x - 8}$ C) $\frac{x + 8}{64}$ D) $\frac{x - 8}{64}$

Answer: D

433)

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

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

Answer: B

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434)

$$\frac{\frac{4}{x} + \frac{3}{x^2}}{\frac{16}{x^2} - \frac{9}{x}}$$

A) $\frac{1}{4x - 3}$ B) $\frac{1}{4 - 3x}$ C) $\frac{4x + 3}{16 - 9x}$ D) $\frac{4x^2 + 3}{16 - 9x}$

Answer: C

435)

$$\frac{\frac{4}{x} + 7}{\frac{16}{x^2} - 49}$$

A) $\frac{1}{4 - 7x}$ B) $\frac{1}{4x - 7}$ C) $\frac{x}{4x - 7}$ D) $\frac{x}{4 - 7x}$

Answer: D

436)

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

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

Answer: D

437)

$$\frac{\frac{8}{3x - 1} - 8}{\frac{8}{3x - 1} + 8}$$

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

Answer: C

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438)

$$\frac{\frac{16}{17-x}+\frac{17}{x-17}}{\frac{8}{x}+\frac{9}{x-17}}$$

A) $\frac{33x}{17x-136}$ B) $-\frac{x}{17x-136}$ C) $-\frac{33x}{17x-136}$ D) $\frac{x}{17x-136}$

Answer: D

439)

$$\frac{\frac{x}{x-6}+1}{\frac{27}{x^2-36}+1}$$

A) $\frac{x+6}{x+3}$ B) $\frac{2x-12}{x-3}$ C) $\frac{2x+12}{x-3}$ D) $\frac{2x+12}{x+3}$

Answer: D

440)

$$\frac{\frac{2}{x+3}+\frac{4}{x+7}}{\frac{3x+13}{x^2+10x+21}}$$

A) 2 B) $3x + 13$ C) 6 D) $\frac{1}{2}$

Answer: A

441)

$$\frac{\frac{x+3}{x-3}+\frac{x-3}{x+3}}{\frac{x+3}{x-3}-\frac{x-3}{x+3}}$$

A) 1 B) $\frac{(x+3)^3}{12x(x+4)}$ C) $\frac{(x+3)^2}{6x}$ D) $\frac{x^2+9}{6x}$

Answer: D

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442)

$$\frac{\frac{1}{x+6}+\frac{1}{x-6}}{\frac{1}{x^2-36}}$$

A) –12 B) x^2 C) 2x D) 12

Answer: C

443)

$$\frac{\frac{3}{x^2-4x-21}-\frac{1}{x-7}}{\frac{1}{x+3}+1}$$

A) $-\frac{x}{x^2-4x-21}$ B) $\frac{x}{x^2-5x-28}$ C) $-\frac{x}{x^2-3x-28}$ D) –1

Answer: C

Solve the problem.

444) The focal length f of a lens with index of refraction n is $\frac{1}{f} = (n-1)\left[\frac{1}{R_1}+\frac{1}{R_2}\right]$ where R_1 and R_2 are the radii of curvature of the front and back surfaces of the lens. Express f as a rational expression.

A) $f = \frac{R_1 R_2}{(n-1)(R_1+R_2)}$ B) $f = \frac{(n-1)(R_1+R_2)}{R_1 R_2}$

C) $f = \frac{n(R_1-R_2)}{R_1 R_2}$ D) $f = \frac{R_1 R_2}{(n+1)(R_1-R_2)}$

Answer: A

445) An electrical circuit contains two resistors connected in parallel. If the resistance of each is R_1 and R_2 ohms, respectively, then their combined resistance R is given the formula

$$R = \frac{1}{\frac{1}{R_1}+\frac{1}{R_2}}$$

If their combined resistance R is 2 ohms and R_2 is 5 ohms, find R_1.

A) $\frac{3}{10}$ ohm B) 3 ohms C) $\frac{10}{3}$ ohms D) $\frac{2}{3}$ ohms

Answer: C

Simplify the expression. Assume that all variables are positive when they appear.

446) $\sqrt[3]{64}$

A) 8 B) 4 C) 16 D) ±4

Answer: B

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447) $\sqrt[3]{-216}$

A) ± 6 B) 36 C) -6 D) 15

Answer: C

448) $\sqrt[4]{10{,}000}$

A) 10,000 B) -10 C) 10 D) not a real number

Answer: C

449) $\sqrt{4y^{20}}$

A) $2y^{20}$ B) $4y^{10}$ C) $2y^{18}$ D) $2y^{10}$

Answer: D

450) $\sqrt{75x^2}$

A) $75x$ B) $5x\sqrt{3}$ C) $5\sqrt{3x}$ D) $3x^2\sqrt{5}$

Answer: B

451) $\sqrt[3]{-8x^{12}y^{12}}$

A) $-2x^4y^4$ B) $2x^4y^4$ C) $-2x^6y^6$ D) $4x^4y^4$

Answer: A

452) $-\sqrt[3]{-125x^{18}y^{18}}$

A) $5x^6y^9$ B) $25x^6y^6$ C) $-5x^{18}y^6$ D) $5x^6y^6$

Answer: D

453) $\sqrt{48x^7y^8}$

A) $4x^7y^8\sqrt{3x}$ B) $4x^3y^4\sqrt{3x}$ C) $4x^3y^4\sqrt{3}$ D) $4y^4\sqrt{3x^7}$

Answer: B

454) $\sqrt[3]{1000x^4y^5}$

A) $10xy\sqrt[3]{xy}$ B) $10xy\sqrt{xy^2}$ C) $10xy\sqrt[3]{xy^2}$ D) $2xy\sqrt[3]{xy^2}$

Answer: C

455) $\sqrt{\dfrac{12x^2y}{49}}$

A) $\dfrac{2\sqrt{3x^2y}}{7}$ B) $x\sqrt{\dfrac{12y}{7}}$ C) $4x\sqrt{3y}$ D) $\dfrac{2x\sqrt{3y}}{7}$

Answer: D

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456) $\sqrt{y^{15}}$

A) $\sqrt{y^{15}}$ B) $y^{14}\sqrt{y}$ C) $y\sqrt{y^{13}}$ D) $y^{7}\sqrt{y}$

Answer: D

457) $\sqrt[3]{-27x^{12}}$

A) $-3x^{9}$ B) $-3x^{12}$ C) $3x^{4}$ D) $-3x^{4}$

Answer: D

458) $\sqrt[3]{x^{29}}$

A) $x^{9}\sqrt[3]{x^{2}}$ B) $\sqrt[3]{x^{29}}$ C) $x\sqrt[3]{x^{26}}$ D) x^{11}

Answer: A

459) $\sqrt[3]{\frac{18}{y^{33}}}$

A) $\frac{18}{y^{11}}$ B) $\sqrt[3]{\frac{18}{y^{33}}}$ C) $\frac{\sqrt[3]{18}}{y^{30}}$ D) $\frac{\sqrt[3]{18}}{y^{11}}$

Answer: D

460) $\sqrt[3]{\frac{24}{x^{27}}}$

A) $\frac{2\sqrt[3]{3}}{x^{9}}$ B) $\sqrt[3]{\frac{24}{x^{27}}}$ C) $\frac{\sqrt[3]{24}}{x^{9}}$ D) $\frac{2\sqrt[3]{3}}{x^{24}}$

Answer: A

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

A) $7-2\sqrt{3}$ B) -2 C) 16 D) 4

Answer: B

462) $(9\sqrt{11})(9\sqrt{33})$

A) $81\sqrt{363}$ B) $9801\sqrt{3}$ C) $891\sqrt{3}$ D) $891\sqrt{33}$

Answer: C

463) $\sqrt[3]{6}\cdot\sqrt[3]{4}$

A) $2\sqrt[3]{6}$ B) $2\sqrt[3]{3}$ C) $\sqrt[3]{24}$ D) $\sqrt[6]{24}$

Answer: B

464) $7\sqrt[3]{2}\cdot 12\sqrt[3]{11}$

A) $84\sqrt[3]{2}\cdot\sqrt[3]{11}$ B) $19\sqrt[3]{22}$ C) $84\sqrt[3]{22}$ D) $84\sqrt[3]{13}$

Answer: C

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465) $-8\sqrt{2} - 9\sqrt{8}$

A) $-10\sqrt{2}$ B) $-17\sqrt{2}$ C) $26\sqrt{2}$ D) $-26\sqrt{2}$

Answer: D

466) $4\sqrt{192} + 2\sqrt{75}$

A) $22\sqrt{3}$ B) $42\sqrt{3}$ C) $-22\sqrt{3}$ D) $-42\sqrt{3}$

Answer: B

467) $7\sqrt{98} + 8\sqrt{18} - 7\sqrt{200}$

A) $17\sqrt{2}$ B) $-17\sqrt{2}$ C) $3\sqrt{2}$ D) $7\sqrt{2}$

Answer: C

468) $\sqrt{2x^2} + 4\sqrt{72x^2} + 3\sqrt{72x^2}$

A) $7x\sqrt{2}$ B) $43x\sqrt{2}$ C) $43x\sqrt{117}$ D) $7x\sqrt{117}$

Answer: B

469) $20\sqrt[3]{2} - 3\sqrt[3]{54}$

A) $20\sqrt[3]{2} - 3\sqrt[3]{54}$ B) $11\sqrt[3]{2}$ C) $17\sqrt[3]{2}$ D) $-11\sqrt[3]{2}$

Answer: B

470) $\sqrt[3]{8y} - \sqrt[3]{128y}$

A) $6\sqrt[3]{y}$ B) $2\sqrt[3]{y} - 4\sqrt[3]{2y}$ C) $2 - 4\sqrt[3]{2}$ D) $4\sqrt[3]{2y} - 2\sqrt[3]{y}$

Answer: B

471) $(3\sqrt{5} + 4)^2$

A) $49 + 24\sqrt{5}$ B) $61 + 24\sqrt{5}$ C) $29 + 24\sqrt{5}$ D) $61 - 24\sqrt{5}$

Answer: B

472) $4\sqrt[3]{64x} + 4\sqrt[3]{8x}$

A) $6\sqrt[3]{x}$ B) $24x$ C) $4\sqrt[3]{72x}$ D) $24\sqrt[3]{x}$

Answer: D

473) $4\sqrt[3]{81x} - 3\sqrt[3]{192x}$

A) $12\sqrt[3]{x} - 3\sqrt[3]{192x}$ B) 0 C) $24\sqrt[3]{x}$ D) cannot simplify

Answer: B

474) $\sqrt[3]{125} + 14 - \sqrt[3]{20}$

A) $\sqrt[3]{125} + 14 - \sqrt[3]{20}$ B) $19 - \sqrt[3]{20}$ C) $19 - 2\sqrt[3]{10}$ D) $19\sqrt[3]{20}$

Answer: B

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475) $\sqrt{3x^2} - \sqrt[3]{432} + \sqrt{363x^2}$

A) $12\sqrt{3x^2} - \sqrt[3]{432}$ B) $12x\sqrt{3} - 6\sqrt{12}$ C) $12x\sqrt{3} - 6\sqrt[3]{2}$ D) $11x\sqrt{3} - 6\sqrt[3]{2}$

Answer: C

476) $(\sqrt{13} + \sqrt{z})(\sqrt{13} - \sqrt{z})$

A) $13 - 2\sqrt{z}$ B) $13z$ C) $13 - 2\sqrt{13z}$ D) $13 - z$

Answer: D

477) $\dfrac{\sqrt{56x^5y^6}}{\sqrt{2y^4}}$

A) $4x^2y\sqrt{7x}$ B) $28xy\sqrt{x}$ C) $2x^4y^2\sqrt{7xy}$ D) $2x^2y\sqrt{7x}$

Answer: D

Solve.

478) When an object is dropped to the ground from a height of h meters, the time it takes for the object to reach the ground is given by the equation $t = \sqrt{\dfrac{h}{4.9}}$, where t is measured in seconds. If an object falls 176.4 meters before it hits the ground, find the time it took for the object to fall.

A) 6 seconds B) 36 seconds C) 9 seconds D) 7 seconds

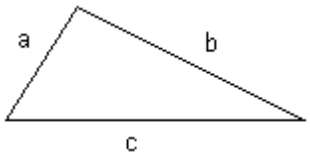
Answer: A

479) If the three lengths of the sides of a triangle are known, Heron's formula can be used to find its area. If a, b, and c are the three lengths of the sides, Heron's formula for area is:

$A = \sqrt{s(s - a)(s - b)(s - c)}$

where s is half the perimeter of the triangle, or $s = \dfrac{1}{2}(a + b + c)$.

Use this formula to find the area of the triangle if a = 7 cm, b = 11 cm and c = 16 cm.



A) $2\sqrt{255}$ sq. cm B) $2\sqrt{510}$ sq. cm C) $2\sqrt{15}$ sq. cm D) $18\sqrt{1173}$ sq. cm

Answer: A

Solve the problem.

480) A formula used to determine the velocity v in feet per second of an object (neglecting air resistance) after it has fallen a certain height is $v = \sqrt{2gh}$, where g is the acceleration due to gravity and h is the height the object has fallen. If the acceleration g due to gravity on Earth is approximately 32 feet per second, find the velocity of a bowling ball after it has fallen 50 feet. (Round to the nearest tenth.)

A) 56.6 ft per sec B) 10.0 ft per sec C) 3200 ft per sec D) 40.0 ft per sec

Answer: A

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481) Police use the formula $s = \sqrt{30fd}$ to estimate the speed s of a car in miles per hour, where d is the distance in feet that the car skidded and f is the coefficient of friction. If the coefficient of friction on a certain gravel road is 0.22 and a car skidded 300 feet, find the speed of the car, to the nearest mile per hour.

A) 1980 mph B) 244 mph C) 95 mph D) 44 mph

Answer: D

482) The formula $v = \sqrt{2.5r}$ can be used to estimate the maximum safe velocity v, in miles per hour, at which a car can travel along a curved road with a radius of curvature r, in feet. To the nearest whole number, find the maximum safe speed for a curve in a road with a radius of curvature of 450 feet.

A) 21 mph B) 34 mph C) 53 mph D) 13 mph

Answer: B

483) The maximum distance d in kilometers that you can see from a height h in meters is given by the formula $d = 3.5\sqrt{h}$. How far can you see from the top of a 380–meter building? (Round to the nearest tenth of a kilometer.)

A) 68.2 km B) 710.9 km C) 19.5 km D) 36.5 km

Answer: A

Simplify the expression. Assume that all variables are positive when they appear.

484) $\frac{1}{\sqrt{2}}$

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

Answer: C

485) $\frac{4}{\sqrt{7}}$

A) $\frac{16\sqrt{7}}{7}$ B) $4\sqrt{7}$ C) $\frac{4\sqrt{7}}{7}$ D) 53

Answer: C

486) $\frac{6}{\sqrt{5}}$

A) $\frac{6\sqrt{5}}{5}$ B) $\frac{36\sqrt{5}}{5}$ C) $6\sqrt{5}$ D) 31

Answer: A

487) $\frac{\sqrt{81}}{\sqrt{11}}$

A) $9\sqrt{11}$ B) 130 C) $\frac{9\sqrt{11}}{11}$ D) $\frac{81\sqrt{11}}{11}$

Answer: C

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488) $\frac{-7}{\sqrt{20}}$

A) $-7\sqrt{5}$ B) -20 C) $-\frac{7\sqrt{5}}{10}$ D) $-\frac{7\sqrt{5}}{5}$

Answer: C

489) $\frac{4}{8-\sqrt{3}}$

A) $\frac{4}{8}-\frac{4}{\sqrt{3}}$ B) $\frac{32+4\sqrt{3}}{61}$ C) $\frac{32-4\sqrt{3}}{61}$ D) $\frac{32+4\sqrt{3}}{-5}$

Answer: B

490) $\frac{\sqrt{3}}{\sqrt{7}+6}$

A) $\frac{\sqrt{21}-6\sqrt{3}}{13}$ B) $\frac{\sqrt{21}-6\sqrt{3}}{-29}$ C) $\frac{\sqrt{21}+6\sqrt{3}}{-29}$ D) $\frac{3\sqrt{21}+7\sqrt{3}}{42}$

Answer: B

491) $\frac{\sqrt{5}}{5\sqrt{2}-\sqrt{5}}$

A) $\frac{\sqrt{2}+1}{9}$ B) $\frac{\sqrt{10}+1}{11}$ C) $\frac{\sqrt{10}-1}{9}$ D) $\frac{\sqrt{10}+1}{9}$

Answer: D

492) $\frac{10-\sqrt{7}}{10+\sqrt{7}}$

A) $\frac{107-20\sqrt{7}}{93}$ B) 1 C) $\frac{93-20\sqrt{7}}{107}$ D) $\frac{107+20\sqrt{7}}{93}$

Answer: A

493) $\frac{10\sqrt{4}+\sqrt{8}}{\sqrt{8}+\sqrt{4}}$

A) $10\sqrt{2}-12$ B) $11\sqrt{2}+12$ C) $10\sqrt{2}-8$ D) $9\sqrt{2}-8$

Answer: D

494) $\frac{11}{\sqrt[3]{3}}$

A) $\frac{11\sqrt[3]{3}}{3}$ B) $\frac{11\sqrt[3]{9}}{3}$ C) $11\sqrt[3]{9}$ D) $11\sqrt[3]{3}$

Answer: B

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495) $\frac{-5}{\sqrt[3]{9}}$

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

Answer: A

496) $\frac{\sqrt{x}-\sqrt{y}}{\sqrt{3x}+\sqrt{7y}}$

A) $\frac{x\sqrt{3}-\sqrt{7xy}-\sqrt{3xy}+y\sqrt{7}}{3x+7y}$ B) $\frac{\sqrt{3x}-\sqrt{10xy}+\sqrt{7y}}{3x+7y}$

C) $\frac{\sqrt{3x}-\sqrt{10xy}+\sqrt{7y}}{3x-7y}$ D) $\frac{x\sqrt{3}-\sqrt{7xy}-\sqrt{3xy}+y\sqrt{7}}{3x-7y}$

Answer: D

497) $\frac{4}{\sqrt{x+h}-\sqrt{x}}$

A) $\frac{4\sqrt{x+h}+\sqrt{x}}{h}$ B) $\frac{4\sqrt{h}}{h}$ C) $\frac{4(\sqrt{x+h}+\sqrt{x})}{h}$ D) $\frac{4(\sqrt{x+h}-\sqrt{x})}{h}$

Answer: C

Simplify the expression.

498) $-32^{1/5}$

A) -2 B) 32 C) -8 D) 16

Answer: A

499) $\left(\frac{1}{9}\right)^{1/2}$

A) 3 B) $\frac{-1}{3}$ C) $\frac{1}{3}$ D) -3

Answer: C

500) $27^{4/3}$

A) 2187 B) 243 C) 81 D) 729

Answer: C

501) $16^{5/4}$

A) 256 B) 512 C) 32 D) 128

Answer: C

502) $243^{4/5}$

A) 2187 B) 6561 C) 19,683 D) 81

Answer: D

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503) $\left(\frac{8}{64}\right)^{2/3}$

A) $-\frac{1}{4}$ B) $\frac{1}{6}$ C) $\frac{1}{2}$ D) $\frac{1}{4}$

Answer: D

504) $(-8)^{4/3}$

A) −16 B) 16 C) 64 D) not a real number

Answer: B

505) $25^{-3/2}$

A) $-\frac{1}{125}$ B) $\frac{1}{125}$ C) −125 D) 125

Answer: B

506) $27^{-4/3}$

A) 81 B) $\frac{1}{81}$ C) $-\frac{1}{81}$ D) not a real number

Answer: B

507) $16^{-5/4}$

A) $-\frac{1}{32}$ B) 32 C) $\frac{1}{32}$ D) not a real number

Answer: C

508) $32^{-4/5}$

A) $\frac{1}{16}$ B) 16 C) not a real number D) $-\frac{1}{16}$

Answer: A

509) $-64^{-4/3}$

A) 256 B) $\frac{1}{256}$ C) $-\frac{1}{256}$ D) not a real number

Answer: C

510) $-243^{-4/5}$

A) $\frac{1}{81}$ B) $-\frac{1}{81}$ C) 81 D) not a real number

Answer: B

511) $1156^{1/2}$

A) 34 B) 136 C) 68 D) 17

Answer: A

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512) $216^{1/3}$

A) 6 B) 18 C) 3888 D) 1296

Answer: A

513) $16^{1/4}$

A) 32 B) 8 C) 2 D) 16

Answer: C

514) $16^{3/4}$

A) 8 B) 11 C) $\sqrt[3]{8}$ D) 64

Answer: A

515) $216^{4/3}$

A) 7776 B) 1296 C) 279,936 D) 46,656

Answer: B

516) $625^{5/4}$

A) 78,125 B) 390,625 C) 1,953,125 D) 3125

Answer: D

517) $4^{-1/2}$

A) $\frac{1}{2}$ B) 2 C) $-\frac{1}{2}$ D) –2

Answer: A

518) $216^{-1/3}$

A) $\frac{1}{6}$ B) –6 C) 6 D) $\frac{1}{18}$

Answer: A

519) $216^{-4/3}$

A) –1296 B) $-\frac{1}{1296}$ C) $\frac{1}{1296}$ D) 1296

Answer: C

520) $16^{-3/4}$

A) –8 B) $-\frac{1}{8}$ C) –64 D) $\frac{1}{8}$

Answer: D

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521) $\left(\frac{25}{4}\right)^{3/2}$

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

Answer: C

522) $\left(\frac{25}{4}\right)^{-1/2}$

A) $\frac{2}{5}$ B) $\frac{5}{2}$ C) $\frac{25}{8}$ D) not a real number

Answer: A

523) $\left(-\frac{64}{125}\right)^{-2/3}$

A) $\frac{25}{16}$ B) $-\frac{16}{25}$ C) $\frac{16}{25}$ D) not a real number

Answer: A

Simplify the expression. Express the answer so that only positive exponents occur. Assume that all variables are positive.

524) $x^{5/8} \cdot x^{3/8}$

A) x B) $x^{15/64}$ C) $x^{15/8}$ D) $\frac{1}{x}$

Answer: A

525) $x^{-2/5} \cdot x^{3/5}$

A) $x^{6/5}$ B) $x^{5/6}$ C) $x^{1/5}$ D) $x^{-1/5}$

Answer: C

526) $(x^{10}y^5)^{1/5}$

A) x^2y B) $x^2|y|$ C) x^2 D) $x^{10}y$

Answer: A

527) $(25x^6y^4)^{1/2}$

A) $5x^6y^2$ B) $5x^3y^2$ C) x^3y^2 D) $5x^3y$

Answer: B

528) $(5x^{3/4})(6x^{2/3})$

A) $30x^{5/12}$ B) $30x^{3/4}$ C) $30x^{17/7}$ D) $30x^{17/12}$

Answer: D

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529) $(x^2y^4)^{5/3}$

A) $x^{20/3}y^{10/3}$ B) $x^{11/3}y^{17/3}$ C) $x^{6/5}y^{12/5}$ D) $x^{10/3}y^{20/3}$

Answer: D

530) $(16x^4y^{-10})^{7/2}$

A) $16{,}384x^{14}y^{35}$ B) $\frac{16x^{14}}{y^{35}}$ C) $\frac{16{,}384x^{14}}{y^{35}}$ D) $\frac{16{,}384}{x^{14}y^{35}}$

Answer: C

531) $(9x^{1/7} \cdot y^{1/7})^2$

A) $81x^2y^2$ B) $81x^{1/49}y^{1/49}$ C) $81x^{2/7}y^{2/7}$ D) $81x^{1/14}y^{1/14}$

Answer: C

532) $\frac{x^{1/4} \cdot x^{6/5}}{x^{1/7}}$

A) $x^{183/140}$ B) $\frac{1}{x^{223/140}}$ C) $\frac{1}{x^{183/140}}$ D) $x^{223/140}$

Answer: A

533) $\frac{(2x^{5/7})^7}{x^{-2/7}}$

A) $2x^{33/7}$ B) $128x^{37/7}$ C) $128x^{33/7}$ D) $2x^{37/7}$

Answer: B

An expression that occurs in calculus is given. Write the expression as a single quotient in which only positive exponents and/or radicals appear.

534) $\frac{(49 - x^2)^{1/2} + 3x^2(49 - x^2)^{-1/2}}{49 - x^2}$

A) $\frac{3x^2}{\sqrt{49 - x^2}}$ B) $\frac{49 - 4x^2}{(49 - x^2)^{3/2}}$ C) $\frac{49 + 2x^2}{(49 - x^2)^{3/2}}$ D) $\frac{3x^2}{(49 - x^2)^{3/2}}$

Answer: C

535) $8x^{3/2}(x^3 + x^2) - 10x^{5/2} - 10x^{3/2}$

A) $8x^{3/2}(x + 1)(4x^2 - 5)$ B) $8x^{3/2}(x^3 - 1) + 8x^3 - 2x^{3/2}(x - 1)$

C) $x^{3/2}(x - 1)[8(x^2 - 1) - 2] + 8x^3$ D) $2x^{3/2}(x + 1)(4x^2 - 5)$

Answer: D

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536) $(x^2 - 1)^{1/2} \cdot \frac{3}{2}(2x + 5)^{1/2} \cdot 2 + (2x + 5)^{3/2} \cdot \frac{1}{2}(x^2 - 1)^{-1/2} \cdot 2x$

A) $(x^2 - 1)^{1/2}\,(2x + 5)^{1/2}(5x^2 + 5x - 3)$

B) $(x^2 - 1)^{1/2}\,(2x + 5)^{-1/2}(5x^2 + 5x - 3)$

C) $\dfrac{(2x + 5)^{1/2}(5x^2 + 5x - 3)}{(x^2 - 1)^{-1/2}}$

D) $\dfrac{(2x + 5)^{1/2}(5x^2 + 5x - 3)}{(x^2 - 1)^{1/2}}$

Answer: D

537) $\dfrac{(x^2 + 2)^{1/2} \cdot \frac{3}{2}(2x + 1)^{1/2} \cdot 2 - (2x + 1)^{3/2} \cdot \frac{1}{2}(x^2 + 2)^{-1/2} \cdot 2x}{x^2 + 2}$

A) $(x^2 + 2)^{3/2}(2x + 1)^{1/2}(x^2 - x + 6)$

B) $\dfrac{(2x + 1)^{1/2}(x^2 - x + 6)}{(x^2 + 2)^{-3/2}}$

C) $(x^2 + 2)^{3/2}(2x + 1)^{-1/2}(x^2 - x + 6)$

D) $\dfrac{(2x + 1)^{1/2}(x^2 - x + 6)}{(x^2 + 2)^{3/2}}$

Answer: D

Factor the expression. Express your answer so that only positive exponents occur.

538) $x^{5/7} + 3x^{2/7}$

A) $x^{1/7}(x^{5/7} + 3)$ B) $x^{1/7}(x^{3/7} + 3)$ C) $x^{2/7}(x^{3/7} + 3)$ D) $x^{2/7}(x^{-3/7} + 3)$

Answer: C

539) $8x^{1/7} - 3x^{-5/7}$

A) $x^{1/7}(8x^{6/7} - 3x^{2/1})$

B) $x^{-5/7}(8x^{6/7} - 3x)$

C) $x^{-5/7}(8x^{6/7} - 3)$

D) $x^{1/3}(8 - 3x^{2/1})$

Answer: C

540) $x^{-2/5} + x^{-6/5}$

A) $x^{-6/5}(x^{4/5} + x)$ B) $x^{-6/5}(x^{4/5} + 1)$ C) $x^{-6/5}(x^{4/5})$ D) $x^{-6/5}(x^{4/5} - 1)$

Answer: B

541) $x^{1/3} - x^{-1/3}$

A) $x^{-1/3}(x^{2/3})$ B) $x^{-1/3}(x^{2/3} - x)$ C) $x^{-1/3}(x^{2/3} + 1)$ D) $x^{-1/3}(x^{2/3} - 1)$

Answer: D

542) $(x + 8)^{-3/13} + (x + 8)^{-1/13} + (x + 8)^{1/13}$

A) $(x + 8)^{-3/13}\,[1 + (x + 8)^{1/13} + (x + 8)^{3/13}]$

B) $(x + 8)^{-3/13}\,[1 + (x + 8)^{-2/13} + (x + 8)^{-4/13}]$

C) $(x + 8)^{-3/13}\,[1 + (x + 8)^{2/13} + (x + 8)^{4/13}]$

D) $(x + 8)^{-3/13}\,[1 + (x + 8)^{4/13} + (x + 8)^{6/13}]$

Answer: C

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543) $(5m + 7)^{-6/5} + (5m + 7)^{1/5} + (5m + 7)^{7/5}$

A) $(5m + 7)^{-6/5}[1 + (5m + 7)^{7/5} - (5m + 7)^{13/5}]$

B) $(5m + 7)^{-6/5}[1 + (5m + 7)^{7/5} + (5m + 7)^{13/5}]$

C) $(5m + 7)^{-6/5}[1 + (5m + 7)^{8/5} + (5m + 7)^{11/5}]$

D) $(5m + 7)^{-6/5}[1 + (5m + 7)^{-7/5} + (5m + 7)^{-13/5}]$

Answer: B

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1) D
2) B
3) B
4) A
5) D
6) B
7) C
8) B
9) C
10) C
11) C
12) A
13) A
14) A
15) B
16) B
17) A
18) B
19) D
20) A
21) A
22) A
23) C
24) B
25) C
26) C
27) D
28) B
29) C
30) D
31) C
32) B
33) D
34) C
35) B
36) D
37) D
38) A
39) C
40) B
41) B
42) A
43) D
44) D
45) A
46) B
47) C
48) C
49) D

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50) A
51) A
52) A
53) A
54) B
55) C
56) C
57) B
58) A
59) A
60) B
61) C
62) B
63) C
64) D
65) C
66) D
67) A
68) C
69) D
70) D
71) A
72) A
73) D
74) C
75) C
76) B
77) C
78) A
79) A
80) C
81) D
82) C
83) B
84) A
85) D
86) B
87) B
88) C
89) C
90) A
91) C
92) D
93) A
94) B
95) A
96) D
97) B
98) A

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99) B
100) B
101) B
102) B
103) B
104) D
105) D
106) C
107) C
108) A
109) B
110) B
111) D
112) A
113) C
114) A
115) A
116) B
117) B
118) D
119) C
120) D
121) B
122) D
123) A
124) D
125) A
126) B
127) C
128) A
129) D
130) C
131) D
132) B
133) A
134) D
135) C
136) C
137) A
138) C
139) C
140) D
141) A
142) B
143) D
144) B
145) C
146) D
147) A

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148) A
149) B
150) A
151) B
152) A
153) B
154) C
155) D
156) D
157) B
158) A
159) C
160) D
161) C
162) C
163) B
164) D
165) D
166) B
167) D
168) B
169) A
170) C
171) A
172) D
173) B
174) C
175) C
176) A
177) A
178) A
179) C
180) B
181) B
182) A
183) A
184) C
185) B
186) B
187) A
188) B
189) D
190) D
191) A
192) B
193) A
194) B
195) B
196) D

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197) D
198) C
199) A
200) D
201) D
202) D
203) C
204) B
205) B
206) A
207) D
208) D
209) B
210) B
211) D
212) A
213) D
214) A
215) C
216) C
217) B
218) A
219) D
220) C
221) D
222) A
223) D
224) D
225) B
226) B
227) C
228) A
229) C
230) A
231) A
232) A
233) A
234) D
235) A
236) A
237) B
238) C
239) D
240) D
241) A
242) B
243) C
244) A
245) C

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246) A
247) D
248) D
249) A
250) D
251) C
252) C
253) A
254) A
255) A
256) B
257) A
258) A
259) C
260) C
261) B
262) A
263) A
264) A
265) C
266) B
267) D
268) B
269) A
270) C
271) A
272) D
273) A
274) A
275) A
276) C
277) D
278) C
279) D
280) D
281) B
282) A
283) D
284) D
285) D
286) C
287) C
288) D
289) B
290) A
291) A
292) D
293) D
294) C

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295) C
296) C
297) C
298) B
299) C
300) D
301) A
302) D
303) A
304) C
305) B
306) A
307) C
308) B
309) D
310) C
311) B
312) B
313) A
314) B
315) C
316) C
317) B
318) C
319) A
320) D
321) C
322) B
323) A
324) D
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327) C
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330) A
331) C
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336) A
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338) B
339) D
340) B
341) C
342) B
343) D

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344) B
345) C
346) B
347) C
348) D
349) D
350) A
351) C
352) B
353) B
354) C
355) B
356) D
357) D
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364) B
365) A
366) A
367) B
368) C
369) A
370) D
371) B
372) B
373) D
374) B
375) C
376) A
377) D
378) A
379) D
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381) B
382) A
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384) D
385) B
386) B
387) D
388) D
389) B
390) D
391) C
392) D

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393) A
394) B
395) A
396) D
397) C
398) B
399) B
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404) C
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414) D
415) A
416) B
417) C
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434) C
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442) C
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462) C
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464) C
465) D
466) B
467) C
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472) D
473) B
474) B
475) C
476) D
477) D
478) A
479) A
480) A
481) D
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483) A
484) C
485) C
486) A
487) C
488) C
489) B
490) B

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491) D
492) A
493) D
494) B
495) A
496) D
497) C
498) A
499) C
500) C
501) C
502) D
503) D
504) B
505) B
506) B
507) C
508) A
509) C
510) B
511) A
512) A
513) C
514) A
515) B
516) D
517) A
518) A
519) C
520) D
521) C
522) A
523) A
524) A
525) C
526) A
527) B
528) D
529) D
530) C
531) C
532) A
533) B
534) C
535) D
536) D
537) D
538) C
539) C

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540) B
541) D
542) C
543) B

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