Test Bank for Precalculus A Unit Circle Approach 4th Ratti

INSTRUCTOR'S TESTING MANUAL

JAMES LAPP

PRECALCULUS
A UNIT CIRCLE APPROACH
FOURTH EDITION

J. S. Ratti
University of South Florida

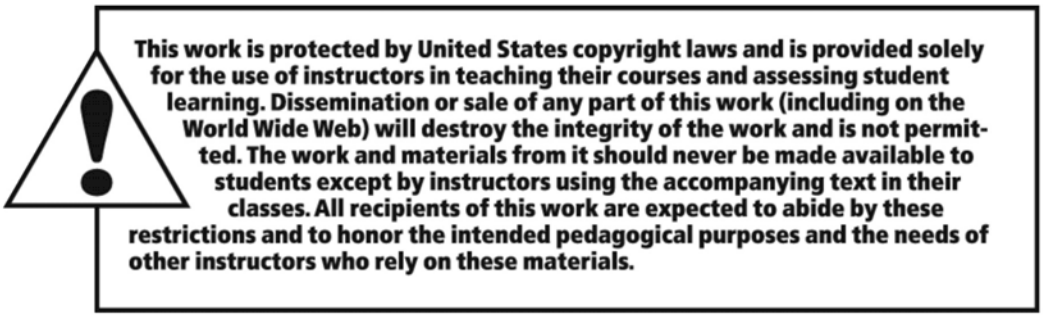
Marcus McWaters
University of South Florida

Leslaw A. Skrzypek
University of South Florida

Jessica Bernards
Portland Community College

Wendy Fresh
Portland Community College

Pearson



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Publishing as Pearson, 330 Hudson Street, NY, NY 10013

ISBN-13: 978-0-13-755305-1
ISBN-10: 0-13-755305-6

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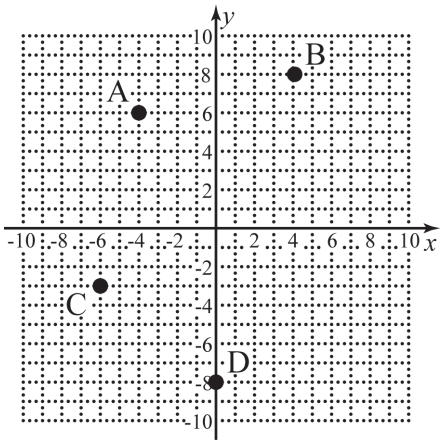
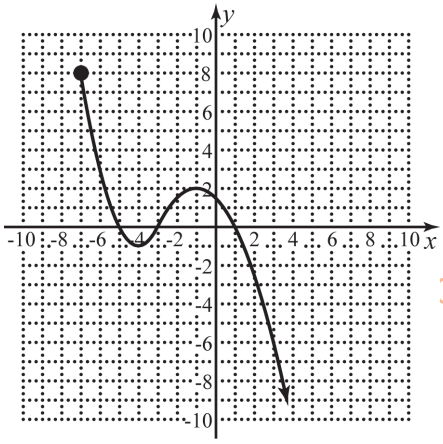
Test Forms A, B, C, and D are Free Response
Test Forms E and F are Multiple Choice

1) Give the coordinates of the points on the following graph.



1) _____

2) Determine the a) domain and b) range of the function graphed below.



2) _____

3) Find the distance and midpoint between $(-4,3)$ and $(10,-11)$.

3) _____

4) Write the equation of the circle centered at $(-5,7)$ with a radius of 9.

4) _____

5) Find the equation of the line passing through $(5,-3)$ with slope -2. Write the solution in slope-intercept form.

5) _____

6) Find the x- and y-intercepts of $y = x^2 - x - 20$.

6) _____

7) Determine the equation of the circle in standard form described by $x^2 - 4x + y^2 + 6y - 36 = 0$.

7) _____

8) Find the equation of the line passing through $(-3,7)$ and $(1,5)$. Write the solution in slope-intercept form.

8) _____

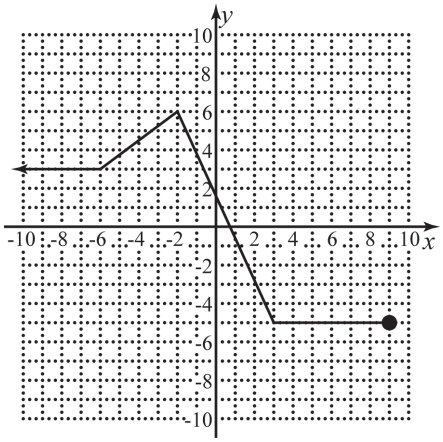
9) Find the domain of $f(x) = \sqrt{x^2 + 2x - 15}$. Write the answer using interval notation.

9) _____

10) Find $f^{-1}(x)$ for $f(x)=4x-11$. 10) _____

11) Find the equation of the line parallel to $-3x+2y=-5$ passing through $(3,-2)$. Write the solution in slope-intercept form. 11) _____

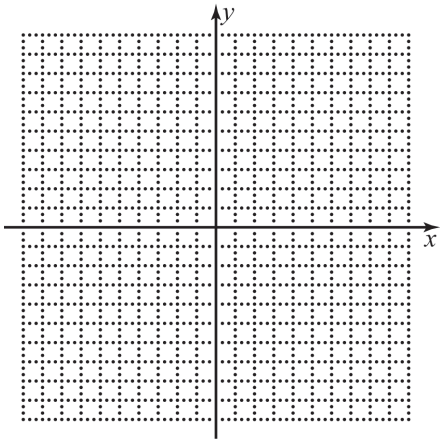
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



12) _____

13) Determine which symmetries the graph of $x^4+3y^2=4$ possesses. 13) _____

14) For $f(x)=-2(x-3)^2+9$, list the transformations to the basic graph and graph the function.

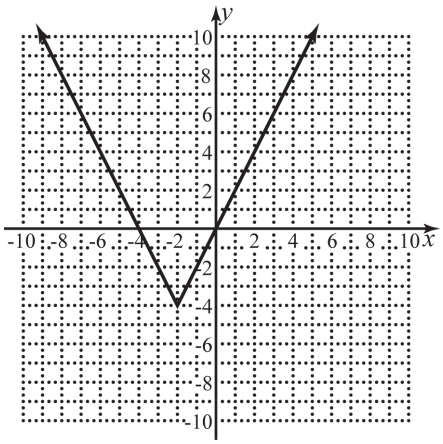


14) _____

15) A company charges \$50 to design a custom coffee mug and \$13 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$400. 15) _____

16) Given $f(x)=2x^2-5$ and $g(x)=\sqrt{x-5}$, find $(f\circ g)(x)$, and determine its domain. 16) _____

17) Write the formula for the graph of $f(x)$ below.

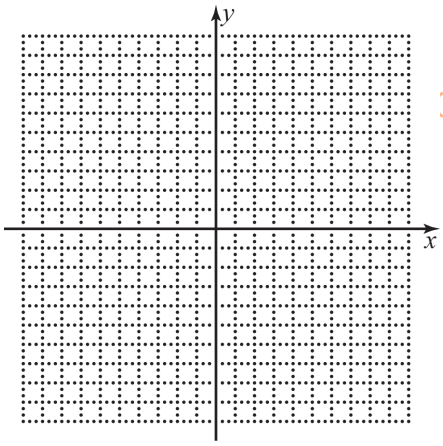


17) _____

18) Find the average rate of change of $f(x)=x^2+9$ as x changes from $a=-1$ to $b=5$.

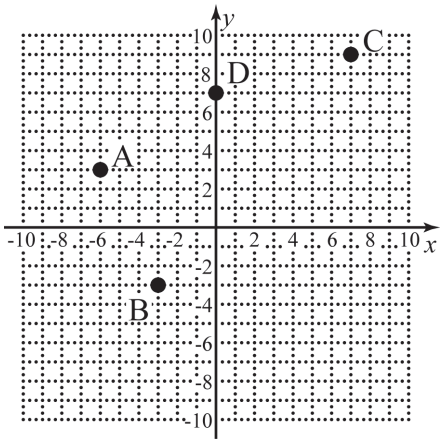
18) _____

19) Graph $f(x)=\begin{cases}-x-1 & \text{if } x\le 3\\ 5 & \text{if } x>3\end{cases}$. Find the value of $f(-3)$ $f(3)$, and $f(6)$.



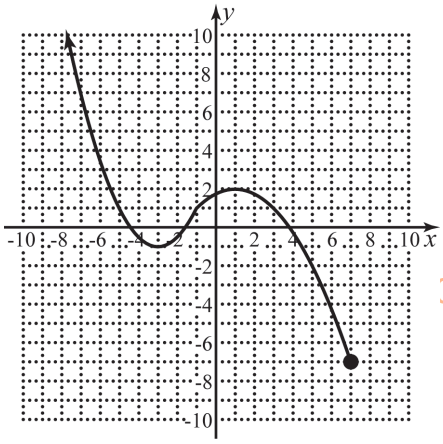
19) _____

1) Give the coordinates of the points on the following graph.



1) _____

2) Determine the a) domain and b) range of the function graphed below.



2) _____

3) Find the distance and midpoint between $(5,-7)$ and $(1,1)$.

3) _____

4) Write the equation of the circle centered at $(7,-9)$ with a radius of 6.

4) _____

5) Find the equation of the line passing through $(-4,3)$ with slope 5. Write the solution in slope-intercept form.

5) _____

6) Find the x- and y-intercepts of $y=\sqrt{5x+100}$.

6) _____

7) Determine the equation of the circle in standard form described by $x^2+10x+y^2-8y+5=0$.

7) _____

8) Find the equation of the line passing through $(4,1)$ and $(-1,-3)$. Write the solution in slope-intercept form.

8) _____

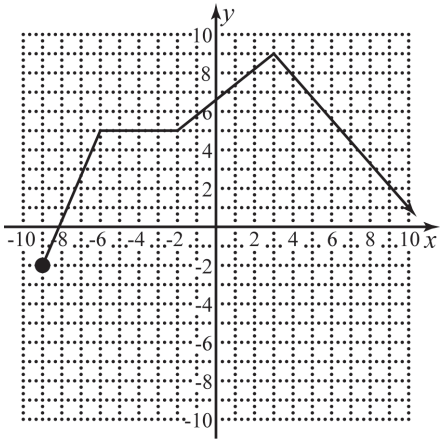
9) Find the domain of $f(x)=\sqrt{x^2+4x-12}$. Write the answer using interval notation.

9) _____

10) Find $f^{-1}(x)$ for $f(x)=3x-8$. 10) _____

11) Find the equation of the line perpendicular to $2x+3y=7$ passing through $(4,7)$. Write the solution in slope-intercept form. 11) _____

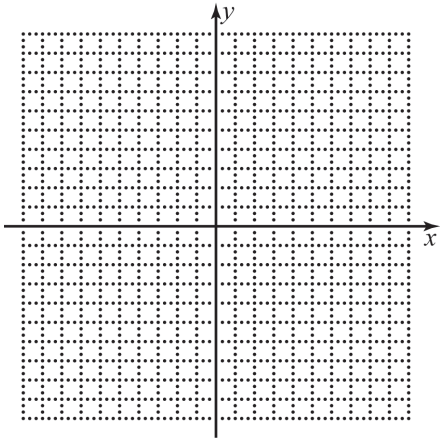
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



12) _____

13) Determine which symmetries the graph of $y=5x^2-x^4$ possesses. 13) _____

14) For $f(x)=\frac{1}{2}(x+5)^2-4$, list the transformations to the basic graph and graph the function.

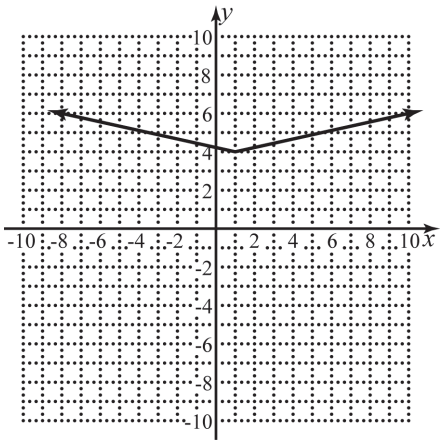


14) _____

15) A company charges \$40 to design a custom coffee mug and \$11 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$300. 15) _____

16) Given $f(x)=\dfrac{x^2+1}{x^2+7}$ and $g(x)=\sqrt{x+7}$, find $(f\circ g)(x)$, and determine its domain. 16) _____

17) Write the formula for the graph of $f(x)$ below.

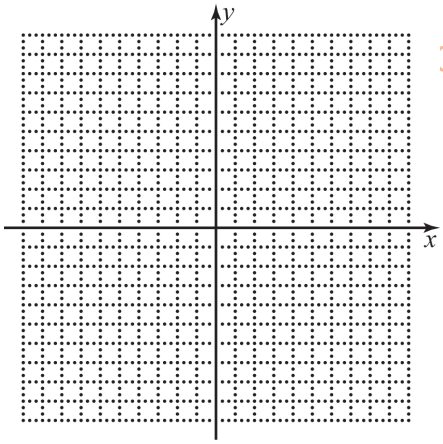


17) _____

18) Find the average rate of change of $f(x) = -3x^3 - 14$ as x changes from $a = -1$ to $b = 2$.

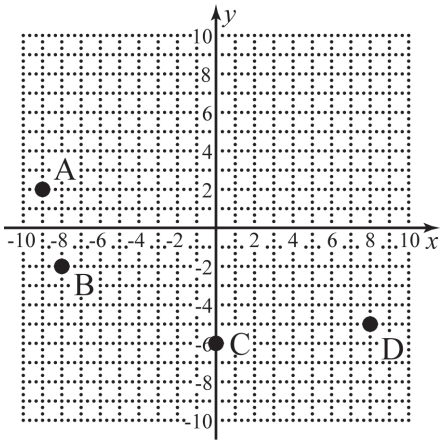
18) _____

19) Graph $f(x) = \begin{cases} -x+3 & \text{if } x > -2 \\ -3 & \text{if } x \le -2 \end{cases}$. Find the values of $f(-4)$, $f(-2)$, and $f(2)$.



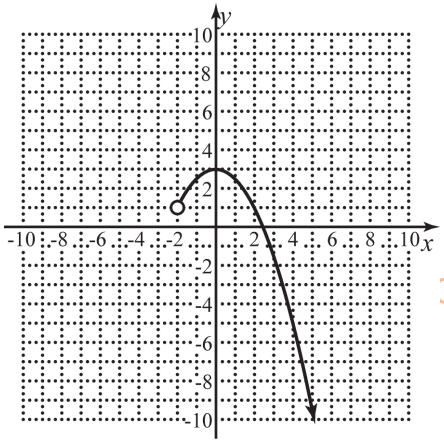
19) _____

1) Give the coordinates of the points on the following graph.



1) _____

2) Determine the a) domain and b) range of the function graphed below.



2) _____

3) Find the distance and midpoint between $(8,5)$ and $(4,-9)$.

3) _____

4) Write the equation of the circle centered at $(-2,9)$ with a radius of 3.

4) _____

5) Find the equation of the line passing through $(1,-2)$ with slope -3. Write the solution in slope-intercept form.

5) _____

6) Find the x- and y-intercepts of $y=\sqrt[5]{2x-32}$.

6) _____

7) Determine the equation of the circle in standard form described by $x^2-6x+y^2+10y+9=0$.

7) _____

8) Find the equation of the line passing through $(-2,1)$ and $(4,-4)$. Write the solution in slope-intercept form.

8) _____

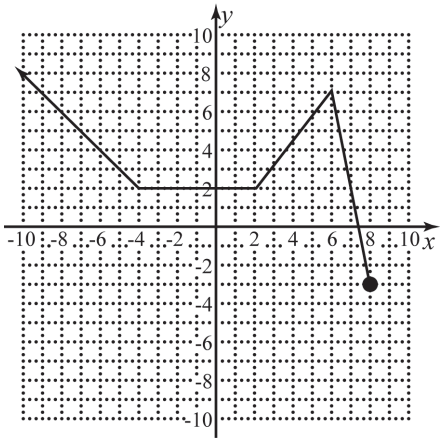
9) Find the domain of $f(x)=\sqrt{x^2+2x-24}$. Write the answer using interval notation.

9) _____

10) Find $f^{-1}(x)$ for $f(x)=8x-5$. 10) _____

11) Find the equation of the line parallel to $5x-3y=4$ passing through $(-10,3)$. Write the solution in slope-intercept form. 11) _____

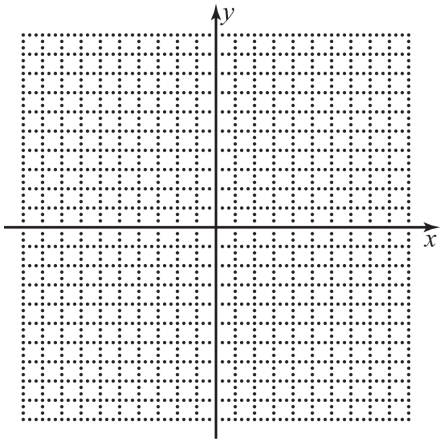
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



12) _____

13) Determine which symmetries the graph of $x^3y^2=4-8x$ possesses. 13) _____

14) For $f(x)=3(x+2)^2-9$, list the transformations to the basic graph and graph the function.

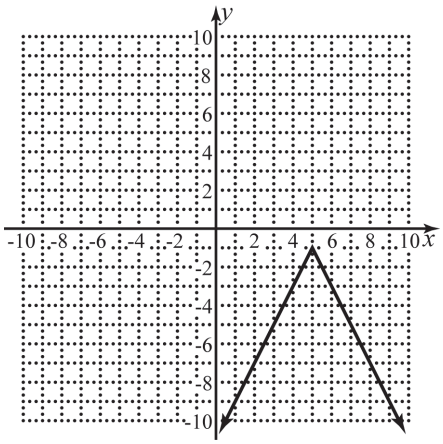


14) _____

15) A company charges \$60 to design a custom coffee mug and \$14 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$450. 15) _____

16) Given $f(x)=3x^2+2$ and $g(x)=\sqrt{7-x}$, find $(f\circ g)(x)$, and determine its domain. 16) _____

17) Write the formula for the graph of $f(x)$ below.

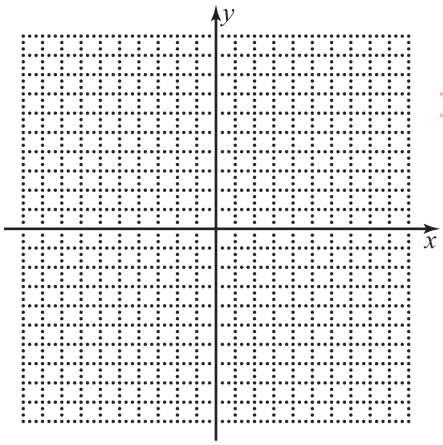


17) _____

18) Find the average rate of change of $f(x)=11-5x^2$ as x changes from $a=-3$ to $b=5$.

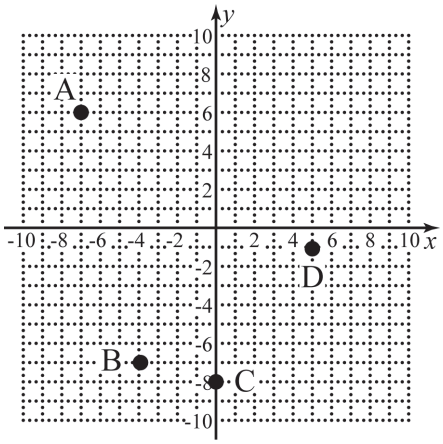
18) _____

19) Graph $f(x)=\begin{cases} 3 & \text{if } x>4 \\ -x+1 & \text{if } x\le 4 \end{cases}$. Find the values of $f(-4)$, $f(4)$, and $f(8)$.



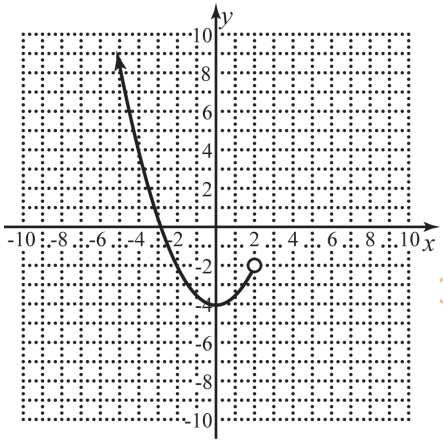
19) _____

1) Give the coordinates of the points on the following graph.



1) _____

2) Determine the a) domain and b) range of the function graphed below.



2) _____

3) Find the distance and midpoint between $(-6,1)$ and $(4,-9)$.

3) _____

4) Write the equation of the circle centered at $(-7,8)$ with a radius of 11.

4) _____

5) Find the equation of the line passing through $(-2,3)$ with slope 4. Write the solution in slope-intercept form.

5) _____

6) Find the x- and y-intercepts of $y = x^3 + 27$.

6) _____

7) Determine the equation of the circle in standard form described by $x^2 - 14x + y^2 + 8y + 56 = 0$.

7) _____

8) Find the equation of the line passing through $(-1,-2)$ and $(4,2)$. Write the solution in slope-intercept form.

8) _____

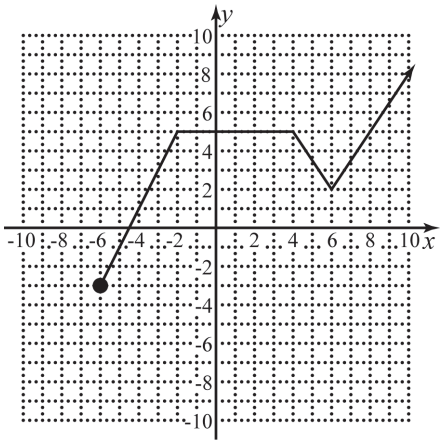
9) Find the domain of $f(x) = \sqrt{x^2 - 3x - 10}$. Write the answer using interval notation.

9) _____

10) Find $f^{-1}(x)$ for $f(x)=11-5x$. 10) _____

11) Find the equation of the line perpendicular to $-4x-3y=5$ passing through $(-8,5)$. Write the solution in slope-intercept form. 11) _____

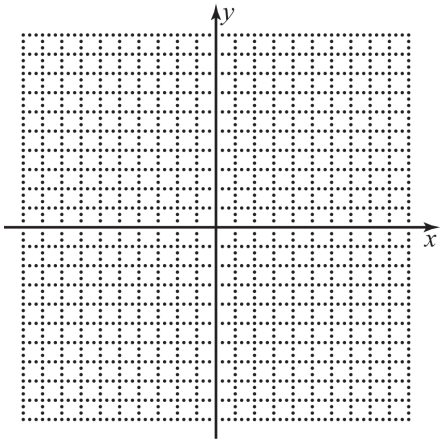
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



12) _____

13) Determine which symmetries the graph of $y=2x^5+7x^3$ possesses. 13) _____

14) For $f(x)=-2(x+5)^2+6$, list the transformations to the basic graph and graph the function.

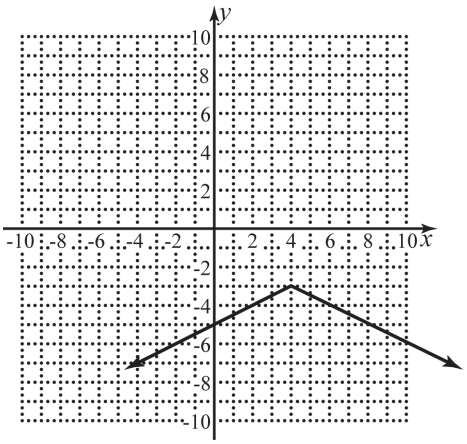


14) _____

15) A company charges \$45 to design a custom coffee mug and \$12 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$500. 15) _____

16) Given $f(x)=\dfrac{x^2}{x^2+3}$ and $g(x)=\sqrt{x-2}$, find $(f\circ g)(x)$, and determine its domain. 16) _____

17) Write the formula for the graph of $f(x)$ below.

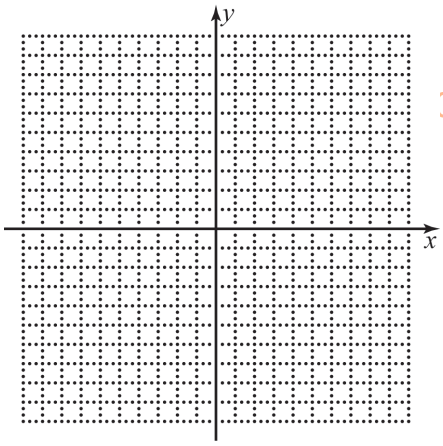


17) _____

18) Find the average rate of change of $f(x) = -2x^2 - 7$ as x changes from $a = -5$ to $b = 4$.

18) _____

19) Graph $f(x) = \begin{cases} -x+3 & \text{if } x < 1 \\ -5 & \text{if } x \geq 1 \end{cases}$. Find the values of $f(-1)$, $f(1)$, and $f(5)$.



19) _____

Chapter 1 Test Form E Name _____

Ratti, *Precalculus: A Unit Circle Approach, 4e*

In exercises 1–2, refer to the graph to the right.

1) What are the coordinates of point A?

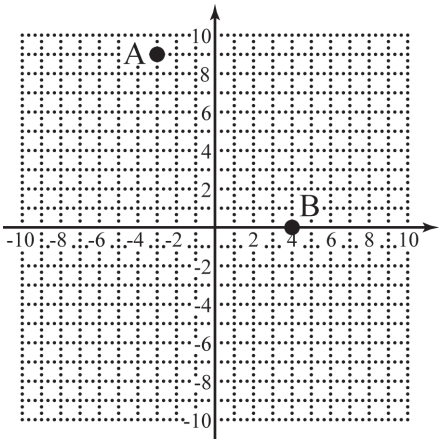
a) $(-3,9)$ b) $(3,-9)$

c) $(9,-3)$ d) $(-9,3)$

2) What are the coordinates of point B?

a) $(-4,0)$ b) $(4,0)$

c) $(0,4)$ d) $(0,-4)$



1) _____

2) _____

In exercises 3–4, refer to the graph to the right.

3) Determine the domain of the function.

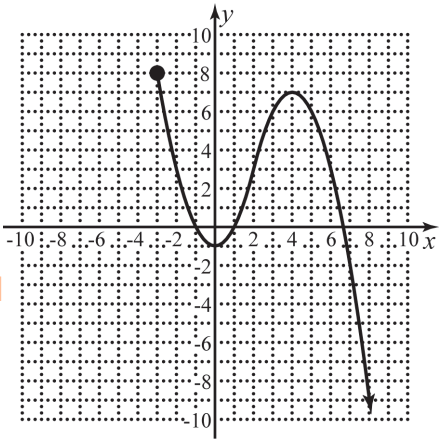
a) $(-3,\infty)$ b) $[-3,\infty)$

c) $(-\infty,8)$ d) $(-\infty,8]$

4) Determine the range of the function.

a) $(-3,\infty)$ b) $[-3,\infty)$

c) $(-\infty,8)$ d) $(-\infty,8]$



3) _____

4) _____

In exercises 5–6 use the points $(-2,3)$ and $(6,-5)$.

5) Find the distance between the points.

a) $4\sqrt{5}$ b) 4 c) $2\sqrt{13}$ d) $8\sqrt{2}$

6) Find the midpoint between the points.

a) $(4,-4)$ b) $(2,-1)$ c) $(-4,4)$ d) $(-2,1)$

7) Write the equation of the circle centered at $(7,-1)$ with a radius of 2.

a) $(x+7)^2+(y-1)^2=4$ b) $(x-7)^2+(y+1)^2=4$

c) $(x+7)^2+(y-1)^2=2$ d) $(x-7)^2+(y+1)^2=2$

8) Find the equation of the line passing through $(-1,4)$ with slope 3.

a) $y=3x+7$ b) $y=3x+4$ c) $y=3x-1$ d) $y=3x-13$

5) _____

6) _____

7) _____

8) _____

Name _____

9) Find the coordinates of the x- and y-intercepts of $y = x^2 - x - 42$. 9) _____

a) $(42,0),(0,-6),(0,7)$ b) $(42,0),(0,-7),(0,6)$
c) $(0,-42),(-7,0),(6,0)$ d) $(0,-42),(-6,0),(7,0)$

10) Determine the equation of the circle described by $x^2 - 8x + y^2 + 10y - 59 = 0$. 10) _____

a) $(x-8)^2 + (y+10)^2 = 59$ b) $(x-4)^2 + (y+5)^2 = 41$
c) $(x-4)^2 + (y+5)^2 = 100$ d) $(x-4)^2 + (y+5)^2 = 59$

11) Find the equation of the line passing through $(-4,3)$ and $(2,4)$. 11) _____

a) $y = 6x + 27$ b) $y = -6x - 21$ c) $y = \frac{1}{6}x + \frac{11}{3}$ d) $y = -\frac{1}{6}x + \frac{7}{3}$

12) Find the domain of $f(x) = \sqrt{x^2 + 5x - 14}$. 12) _____

a) $[-7,2]$ b) $[-2,7]$
c) $(-\infty,-7]\cup[2,\infty)$ d) $(-\infty,-2]\cup[7,\infty)$

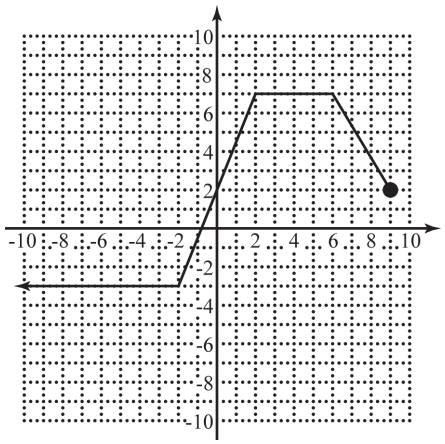
13) Given $f(x) = \sqrt[3]{x-27}$, find $f^{-1}(x)$. 13) _____

a) $f^{-1}(x) = \sqrt[3]{x+27}$ b) $f^{-1}(x) = \frac{1}{\sqrt[3]{x-27}}$
c) $f^{-1}(x) = x^3 + 27$ d) $f^{-1}(x) = -\sqrt[3]{x-27}$

14) Find the equation of the line parallel to $2x + 5y = 13$ passing through $(5,-3)$. 14) _____

a) $y = \frac{5}{2}x - \frac{31}{2}$ b) $y = \frac{2}{5}x - 5$ c) $y = -\frac{5}{2}x + \frac{19}{2}$ d) $y = -\frac{2}{5}x - 1$

In exercises 15–17, refer to the graph to the right.



15) When is the graph increasing? 15) _____

a) $(-2,2)$ b) $(6,9)$
c) $(-\infty,-2)\cup(2,6)$ d) Never

16) When is the graph decreasing? 16) _____

a) $(-2,2)$ b) $(6,9)$
c) $(-\infty,-2)\cup(2,6)$ d) Never

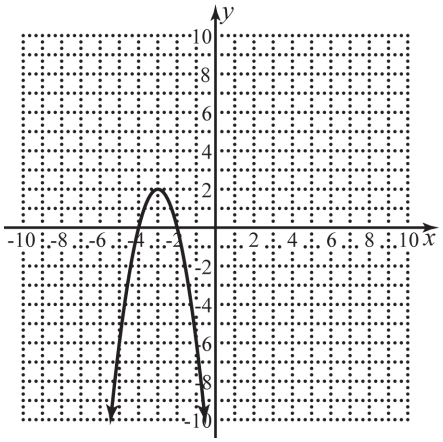
17) When is the graph constant? 17) _____

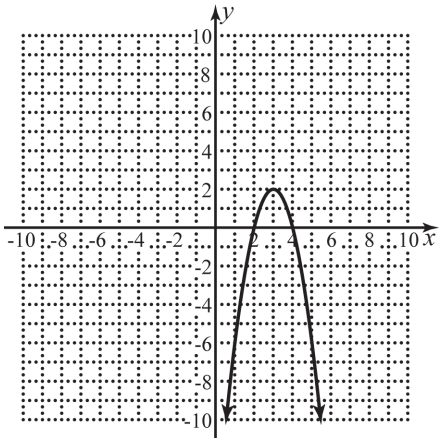
a) $(-2,2)$ b) $(6,9)$
c) $(-\infty,-2)\cup(2,6)$ d) Never

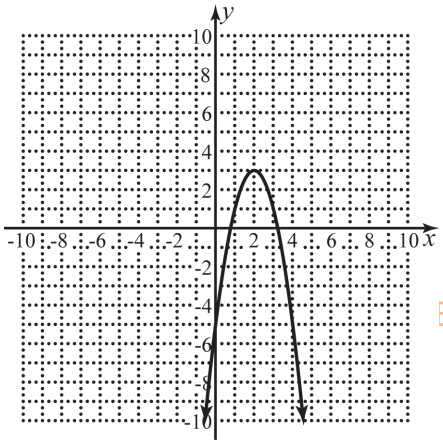
18) Determine which symmetries the graph of $xy^2 + x^3 = xy^4$ possesses. 18) _____

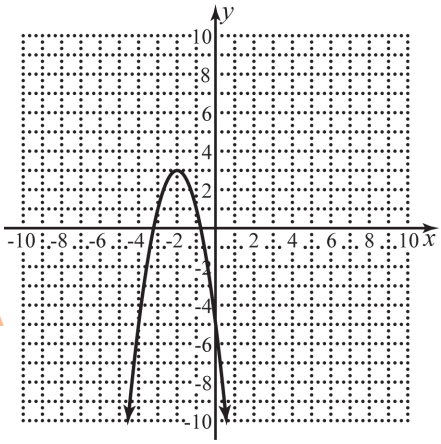
a) x-axis b) y-axis c) origin d) all

19) Graph $f(x) = -2(x-3)^2 + 2$. 19) _____

a) 

b) 

c) 

d) 

20) Which of the following is not a transformation of the basic function in $g(x) = \frac{1}{2}(x+3)^2 - 1$? 20) _____

a) vertical shift of 1 down
b) vertical reflection
c) vertical stretch of $\frac{1}{2}$
d) horizontal shift of 3 to the left

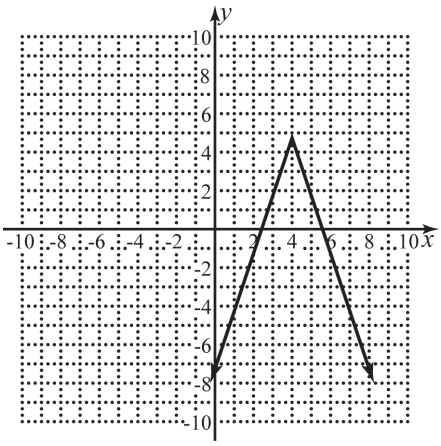
21) A company charges \$35 to design a custom coffee mug and \$9 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$250. 21) _____

a) $C(x) = 35x + 9$; 13 mugs
b) $C(x) = 35x + 9$; 14 mugs
c) $C(x) = 9x + 35$; 23 mugs
d) $C(x) = 9x + 35$; 24 mugs

22) Given $f(x) = 7x^2 + 4$ and $g(x) = \sqrt{8-x}$, find $(f \circ g)(x)$ and determine its domain. 22) _____

a) $\sqrt{4-7x^2}$; $(-\infty, \infty)$
b) $\sqrt{4-7x^2}$; $(-\infty, 8]$
c) $60-7x$; $(-\infty, 8]$
d) $60-7x$; $[8, \infty)$

23) Write the formula for the function graphed to the right. 23) _____



a) $f(x) = -3|x+4|+5$

b) $f(x) = \frac{1}{3}|x-4|+5$

c) $f(x) = -2|x-4|+5$

d) $f(x) = -3|x-4|+5$

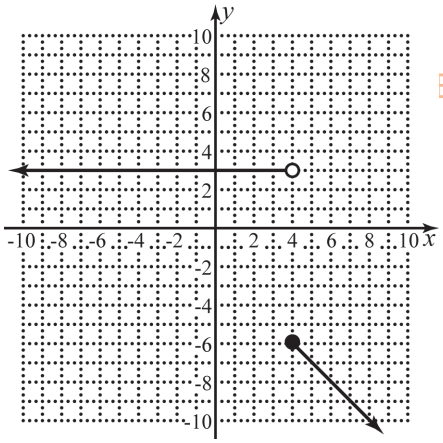
24) Find the average rate of change of $f(x) = x^2 - 2x$ as x changes from $a = -4$ to $b = 3$. 24) _____

a) 27/7 b) −5/7 c) −3 d) 21

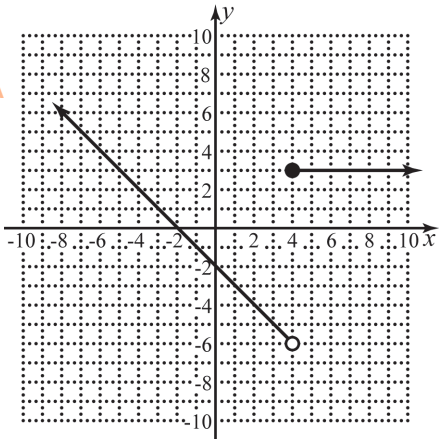
In exercises 25–27, use $f(x) = \begin{cases} -x-2 & \text{if } x \le 4 \\ 3 & \text{if } x > 4 \end{cases}$.

25) Graph $f(x)$. 25) _____

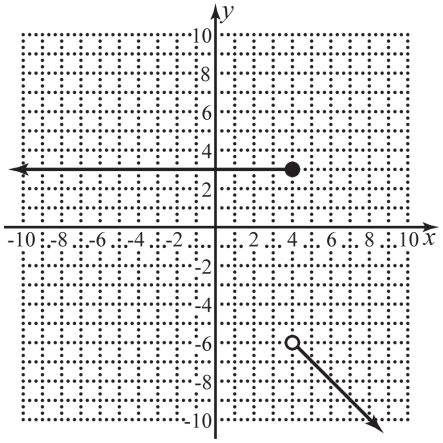
a)



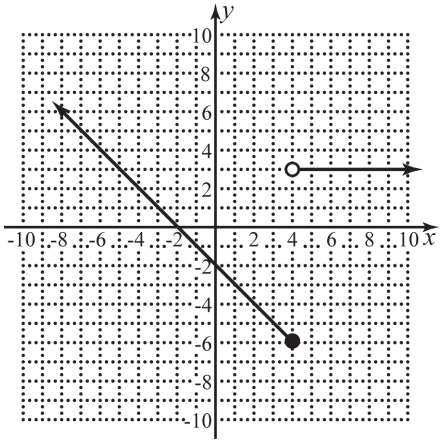
b)



c)



d)



26) Determine the value of $f(4)$. 26) _____

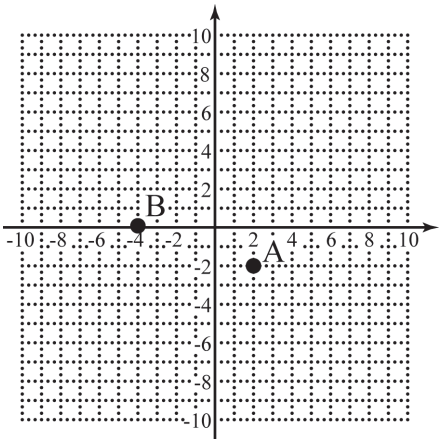
a) 3 b) −6 c) 2 d) −1

27) Determine the value of $f(-7)$. 27) _____

a) 5 b) −9 c) 3 d) −5

Name _____

In exercises 1–2, refer to the graph to the right.



1) What are the coordinates of point A? 1) _____

a) $(2,-2)$ b) $(-2,2)$

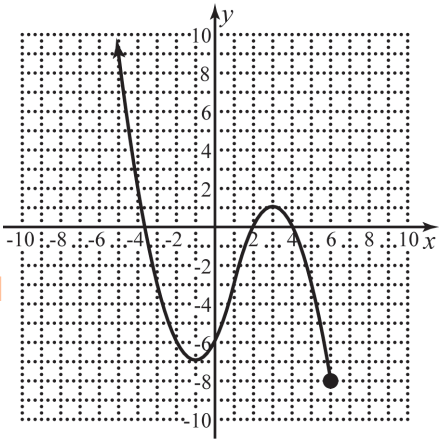
c) $(-2,-2)$ d) $(2,2)$

2) What are the coordinates of point B? 2) _____

a) $(-4,0)$ b) $(4,0)$

c) $(0,4)$ d) $(0,-4)$

In exercises 3–4, refer to the graph to the right.



3) Determine the domain of the function. 3) _____

a) $(-\infty,6]$ b) $(-\infty,6)$

c) $[-8,\infty)$ d) $(-8,\infty)$

4) Determine the range of the function. 4) _____

a) $(-\infty,6]$ b) $(-\infty,6)$

c) $[-8,\infty)$ d) $(-8,\infty)$

In exercises 5–6, use the points $(4,-4)$ and $(-8,10)$. .

5) Find the distance between the points. 5) _____

a) $2\sqrt{85}$ b) $2\sqrt{13}$ c) $\sqrt{26}$ d) $2\sqrt{10}$

6) Find the midpoint between the points. 6) _____

a) $(-2,3)$ b) $(6,-7)$ c) $(-7,6)$ d) $(2,-3)$

7) Write the equation of the circle centered at $(-5,2)$ with a radius of 5. 7) _____

a) $(x-5)^2+(y+2)^2=5$ b) $(x-5)^2+(y+2)^2=25$

c) $(x+5)^2+(y-2)^2=5$ d) $(x+5)^2+(y-2)^2=25$

8) Find the equation of the line passing through $(-5,4)$ with slope -3. 8) _____

a) $y=-3x+17$ b) $y=-3x-1$ c) $y=-3x+4$ d) $y=-3x-11$

Name _____

9) Find the coordinates of the x- and y-intercepts of $y = \sqrt[3]{9x+216}$. 9) _____

a) $(24,0),(0,6)$ b) $(-24,0),(0,6)$ c) $(0,24),(6,0)$ d) $(0,-24),(6,0)$

10) Determine the equation of the circle described by $x^2+6x+y^2-8y-56=0$. 10) _____

a) $(x+6)^2+(y-8)^2=56$ b) $(x+3)^2+(y-4)^2=81$

c) $(x+3)^2+(y-4)^2=25$ d) $(x+3)^2+(y-4)^2=56$

11) Find the equation of the line passing through $(-3,-2)$ and $(2,5)$. 11) _____

a) $y=-\frac{7}{5}x+\frac{39}{5}$ b) $y=\frac{7}{5}x+\frac{11}{5}$ c) $y=-\frac{5}{7}x+\frac{45}{7}$ d) $y=\frac{5}{7}x-\frac{25}{7}$

12) Find the domain of $f(x)=\sqrt{x^2-5x-24}$. Write your answer using interval notation. 12) _____

a) $[-8,3]$ b) $[-3,8]$

c) $(-\infty,-8]\cup[3,\infty)$ d) $(-\infty,-3]\cup[8,\infty)$

13) Given $f(x)=\dfrac{4}{x-5}$, find $f^{-1}(x)$. 13) _____

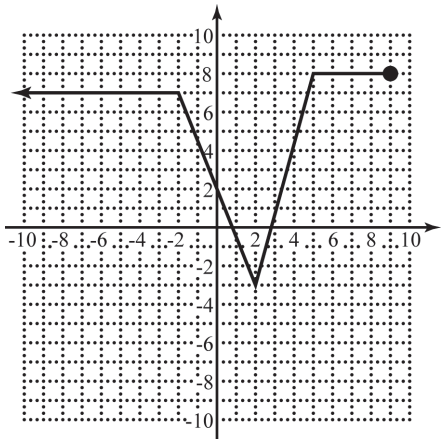
a) $f^{-1}(x)=\dfrac{5x+4}{x}$ b) $f^{-1}(x)=\dfrac{x-5}{4}$

c) $f^{-1}(x)=-\dfrac{4}{x-5}$ d) $f^{-1}(x)=\dfrac{4}{x+5}$

14) Find the equation of the line perpendicular to $-4x+3y=11$ passing through $(6,5)$. 14) _____

a) $y=-\frac{3}{4}x+\frac{19}{2}$ b) $y=\frac{3}{4}x+\frac{1}{2}$ c) $y=-\frac{1}{4}x+\frac{13}{2}$ d) $y=\frac{1}{4}x+\frac{7}{2}$

In exercises 15–17, refer to the graph to the right.



15) When is the graph increasing? 15) _____

a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$

c) $(-2,2)$ d) Never

16) When is the graph decreasing? 16) _____

a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$

c) $(-2,2)$ d) Never

17) When is the graph constant? 17) _____

a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$

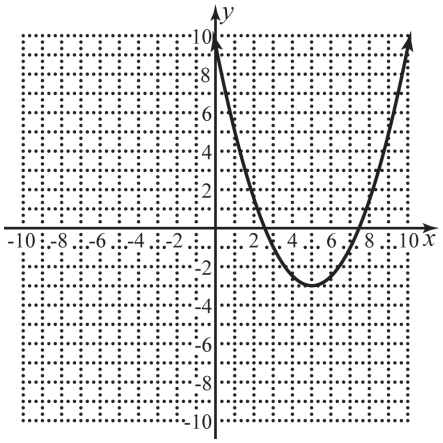
c) $(-2,2)$ d) Never

18) Determine which symmetries the graph of $x^2y^2-y^4=x$ possesses. 18) _____

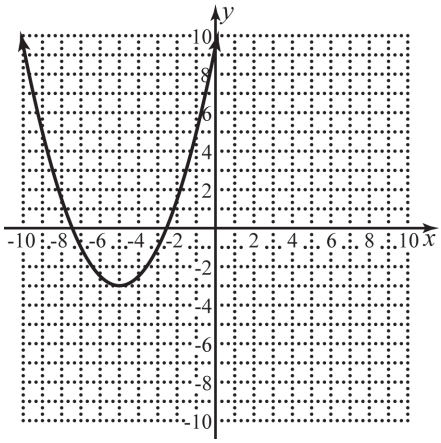
a) x-axis b) y-axis c) origin d) all

19) Graph $f(x)=\frac{1}{2}(x+3)^2-5$. 19) _____

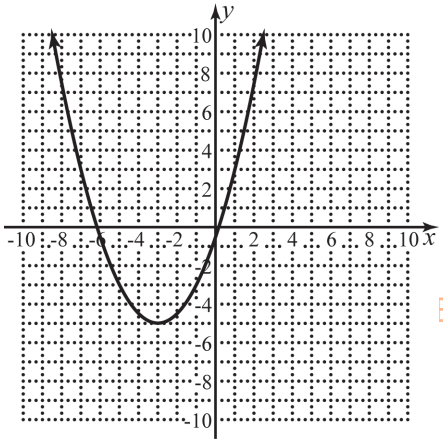
a)



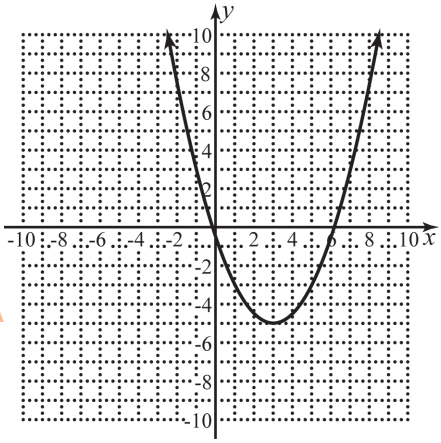
b)



c)



d)



20) Which of the following is not a transformation of the basic function in $g(x)=-3(x-2)^2+7$? 20) _____

a) vertical stretch of $\frac{1}{3}$
b) vertical reflection
c) horizontal shift of 2 to the right
d) vertical shift of 7 up

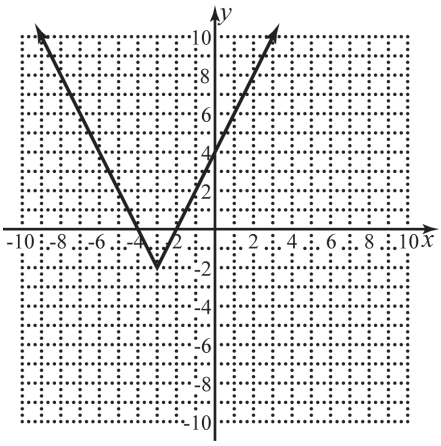
21) A company charges \$45 to design a custom coffee mug and \$14 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$350. 21) _____

a) $C(x)=45x+14$; 7 mugs
b) $C(x)=45x+14$; 8 mugs
c) $C(x)=14x+45$; 22 mugs
d) $C(x)=14x+45$; 21 mugs

22) Given $f(x)=\dfrac{x^2-3}{x^2+2}$ and $g(x)=\sqrt{x+3}$, find $(f\circ g)(x)$ and determine its domain. 22) _____

a) $\sqrt{\dfrac{4x^2+3}{x^2+2}};\ (-\infty,\infty)$
b) $\sqrt{\dfrac{4x^2+3}{x^2+2}};\ [-3,\infty)$
c) $\dfrac{x}{x+5};\ (-\infty,-3]$
d) $\dfrac{x}{x+5};\ [-3,\infty)$

23) Write the formula for the function graphed to the right. 23) _____



a) $f(x) = -2|x+3|-2$

b) $f(x) = 2|x+3|-2$

c) $f(x) = \frac{1}{2}|x+3|-2$

d) $f(x) = 2|x-3|-2$

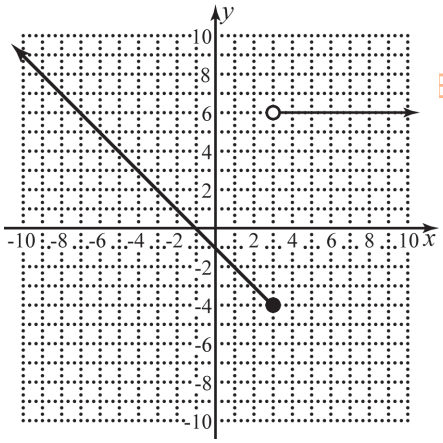
24) Find the average rate of change of $f(x) = x^3 + 8x$ as x changes from $a = -2$ to $b = 1$. 24) _____

a) -33 b) $1/3$ c) -5 d) 11

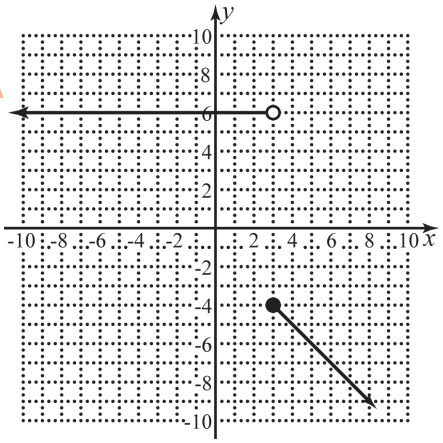
In exercises 25–27, use $f(x) = \begin{cases} -x-1 & \text{if } x \geq 3 \\ 6 & \text{if } x < 3 \end{cases}$.

25) Graph $f(x)$. 25) _____

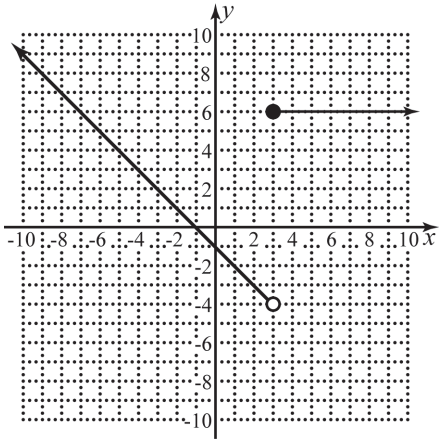
a)



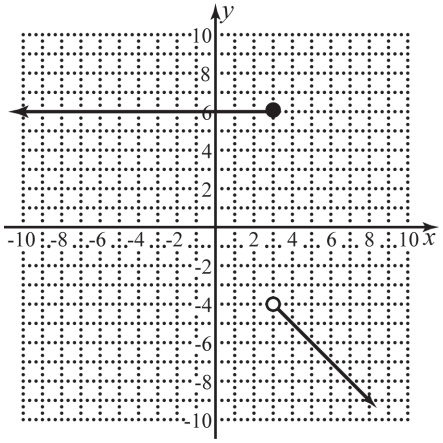
b)



c)



d)



26) Determine the value of $f(3)$. 26) _____

a) 6 b) –4 c) 2 d) –2

27) Determine the value of $f(8)$. 27) _____

a) –9 b) 7 c) 6 d) 2

Form A

1) A) $(-4,6)$; B) $(4,8)$; C) $(-6,-3)$; D) $(0,-8)$

2) a) $[-7,\infty)$; b) $(-\infty,8]$

3) Distance: $14\sqrt{2}$; Midpoint: $(3,-4)$

4) $(x+5)^2+(y-7)^2=81$

5) $y=-2x+7$

6) $(-4,0),(5,0),(0,-20)$

7) $(x-2)^2+(y+3)^2=49$

8) $y=-\frac{1}{2}x+\frac{11}{2}$

9) $(-\infty,-5]\cup[3,\infty)$

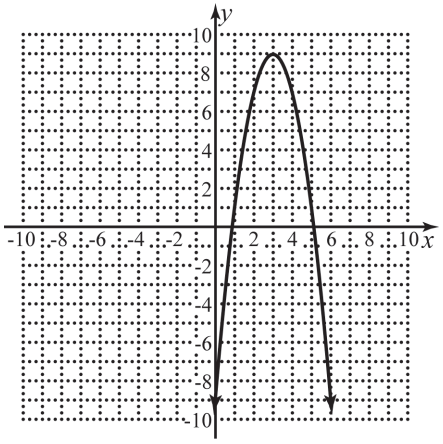
10) $f^{-1}(x)=\dfrac{x+11}{4}$

11) $y=\frac{3}{2}x-\frac{13}{2}$

12) a) $(-6,-2)$; b) $(-2,3)$; c) $(-\infty,-6)\cup(3,9)$

13) x-axis, y-axis, origin

14)



Horizontal Shift: Right 3

Vertical Shift: Up 9

Vertical Stretch: 2

Vertical Reflection: Yes

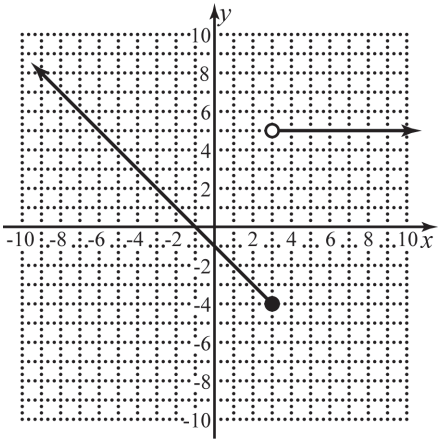
15) $C(x)=13x+50$; 26 mugs

16) $(f\circ g)(x)=2x-15$; $[5,\infty)$

17) $f(x)=2|x+2|-4$

18) 4

19)



$f(-3)=2, f(3)=-4, f(6)=5$

Form B

1) A) $(-6,3)$; B) $(-3,-3)$; C) $(7,9)$; D) $(0,7)$

2) a) $(-\infty,7]$; b) $[-7,\infty)$

3) Distance: $4\sqrt{5}$; Midpoint: $(3,-3)$

4) $(x-7)^2+(y+9)^2=36$

5) $y=5x+23$

6) $(-20,0),(0,10)$

7) $(x+5)^2+(y-4)^2=36$

8) $y=\frac{4}{5}x-\frac{11}{5}$

9) $(-\infty,-6]\cup[2,\infty)$

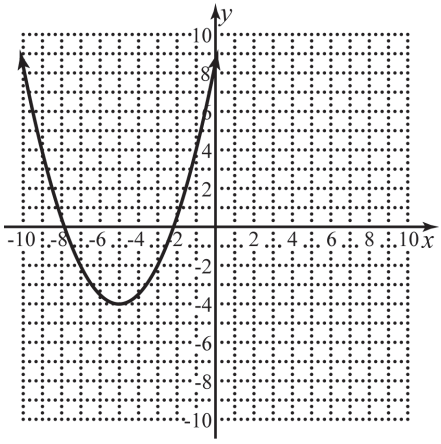
10) $f^{-1}(x)=\dfrac{x+8}{3}$

11) $y=\frac{3}{2}x+1$

12) a) $(-9,-6)\cup(-2,3)$; b) $(3,\infty)$; c) $(-6,-2)$

13) y-axis

14)



Horizontal Shift: Left 5

Vertical Shift: Down 4

Vertical Stretch: $\frac{1}{2}$

Vertical Reflection: No

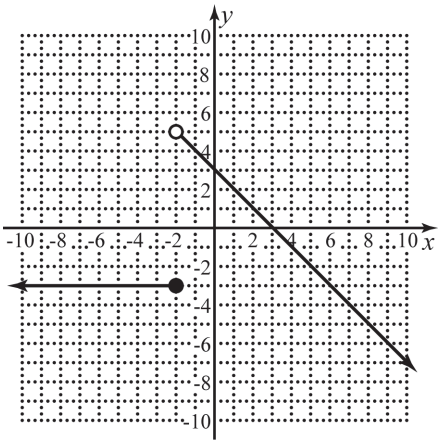
15) $C(x)=11x+40$; 23 mugs

16) $(f\circ g)(x)=\dfrac{x+8}{x+14}$; $[-7,\infty)$

17) $f(x)=\frac{1}{5}|x-1|+4$

18) -9

19)



$f(-4)=-3, f(-2)=-3, f(2)=1$

Form C

1) A) $(-9,2)$; B) $(-8,-2)$; C) $(0,-6)$; D) $(8,-5)$

2) a) $(-2,\infty)$; b) $(-\infty,3]$

3) Distance: $2\sqrt{53}$; Midpoint: $(6,-2)$

4) $(x+2)^2+(y-9)^2=9$

5) $y=-3x+1$

6) $(16,0),(0,-2)$

7) $(x-3)^2+(y+5)^2=25$

8) $y=-\frac{5}{6}x-\frac{2}{3}$

9) $(-\infty,-6]\cup[4,\infty)$

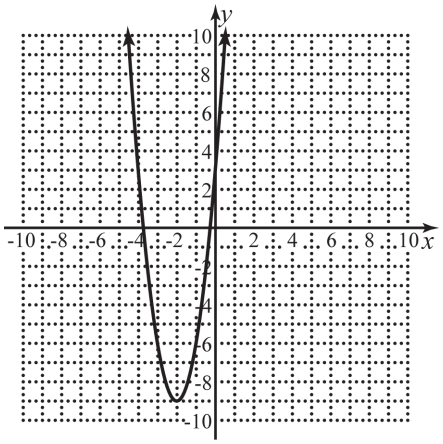
10) $f^{-1}(x)=\dfrac{x+5}{8}$

11) $y=\frac{5}{3}x+\frac{59}{3}$

12) a) $(2,6)$; b) $(-\infty,-4)\cup(6,8)$; c) $(-4,2)$

13) x-axis

14)



Horizontal Shift: Left 2

Vertical Shift: Down 9

Vertical Stretch: 3

Vertical Reflection: No

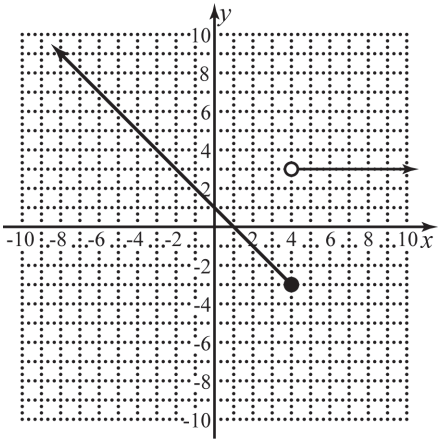
15) $C(x)=14x+60$; 27 mugs

16) $(f\circ g)(x)=23-3x$; $(-\infty,7]$

17) $f(x)=-2|x-5|-1$

18) -10

19)



$f(-4)=5, f(4)=-3, f(8)=3$

Form D

1) A) $(-7,6)$; B) $(-4,-7)$; C) $(0,-8)$; D) $(5,-1)$

2) a) $(-\infty,-2)$; b) $[-4,\infty)$

3) Distance: $10\sqrt{2}$; Midpoint: $(-1,-4)$

4) $(x+7)^2+(y-8)^2=121$

5) $y=4x+11$

6) $(-3,0),(0,27)$

7) $(x-7)^2+(y+4)^2=9$

8) $y=\frac{4}{5}x-\frac{6}{5}$

9) $(-\infty,-2]\cup[5,\infty)$

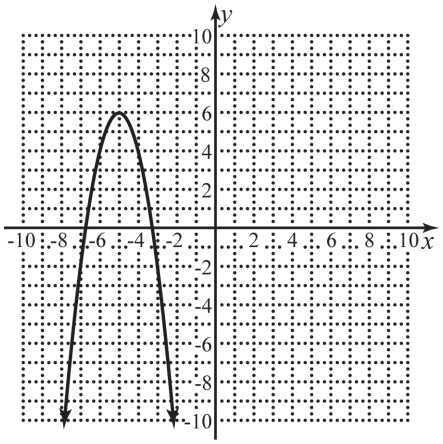
10) $f^{-1}(x)=\dfrac{11-x}{5}$

11) $y=\frac{3}{4}x+11$

12) a) $(-6,-2)\cup(6,\infty)$; b) $(4,6)$; c) $(-2,4)$

13) origin

14)



Horizontal Shift: Left 5

Vertical Shift: Up 6

Vertical Stretch: 2

Vertical Reflection: Yes

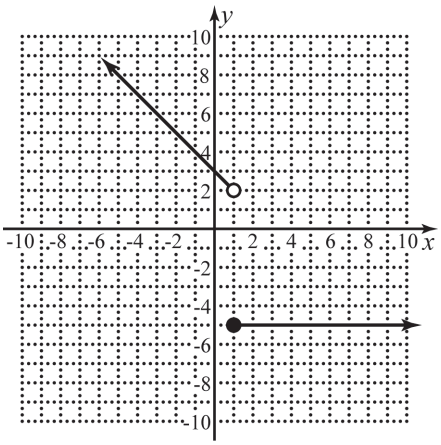
15) $C(x)=12x+45$; 37 mugs

16) $(f\circ g)(x)=\dfrac{x-2}{x+1}$; $[2,\infty)$

17) $f(x)=-\frac{1}{2}|x-4|-3$

18) 2

19)



$f(-1)=4, f(1)=-5, f(5)=-5$

Form E

1) A
2) B
3) B
4) D
5) D
6) B
7) B
8) A
9) D
10) C
11) C
12) C
13) C
14) D
15) A
16) B
17) C
18) D
19) B
20) B
21) C
22) C
23) D
24) C
25) D
26) B
27) A

Form F

1) A
2) A
3) A
4) C
5) A
6) A
7) D
8) D
9) B
10) B
11) B
12) D
13) A
14) A
15) B
16) C
17) A
18) A
19) C
20) A
21) D
22) D
23) B
24) D
25) B
26) B
27) A

Chapter 2 Test Form A Name _____

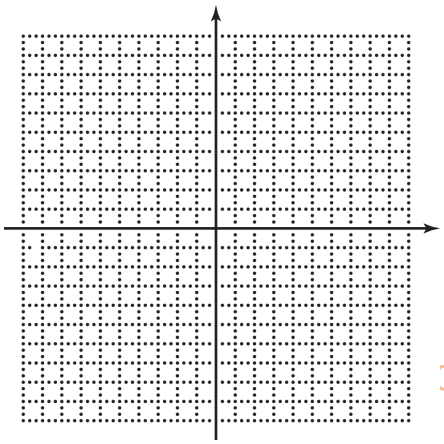
Ratti, *Precalculus: A Unit Circle Approach, 4e*

1) For $x^5-3x^4-5x^3+15x^2+4x-12$, use Descartes' rule of signs to determine the possible number of positive and negative rational roots. 1) _____

2) y varies directly with x^2, and $y=\frac{8}{5}$ when $x=2$. Find the value of k, write the equation that represents this variation, and find the value of y when $x=3$. 2) _____

3) For $f(x)=7x^3(2x-5)\left(x^2+16\right)^4(x+5)^6$, determine: a) the real roots, b) their multiplicity, and c) whether the graph crosses or touches the x-axis at each root. 3) _____

4) Sketch the graph of $f(x)=x^3-2x^2-11x+12$. State the x- and y-intercepts.



4) _____

5) List all the possible rational roots of $2x^3-3x^2-29x+60$ and factor the polynomial. 5) _____

6) Determine the end behavior for $f(x)=-x^2(x-1)^3(x+3)^5$. 6) _____

7) Find the equation in standard form of the parabolic function that passes through $(1,27)$ with vertex at $(-3,-5)$. 7) _____

8) Find the equation of the oblique asymptote for $f(x)=\frac{2x^3-9x^2-10x+29}{x^2-3x-10}$. 8) _____

9) Use the given roots to factor $2x^5+9x^4+9x^3+3x^2+7x-6$.
$x=i,-2$ 9) _____

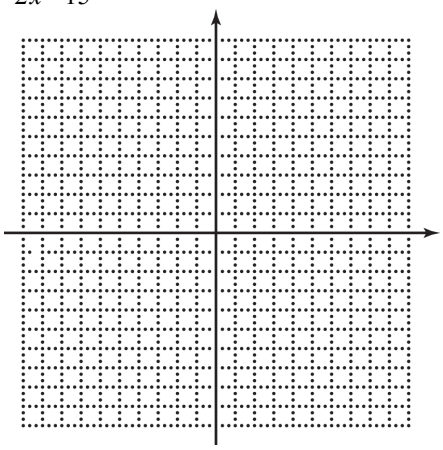
10) Given $f(x)=-4x^2+52x+21$, determine: a) if function has a maximum or minimum value, b) where this value occurs, and c) what that value is. 10) _____

11) z varies directly with x and inversely with y, and $z=43.75$ when $x=25$ and $y=0.2$. Find z when $x=20$ and $y=0.4$. 11) _____

12) The cost, in dollars, to produce x items is given by $C = 20x + 400$. If the demand function is given by $p = 500 - 10x$, find the value of x that maximizes profit and state that maximum profit. 12) _____

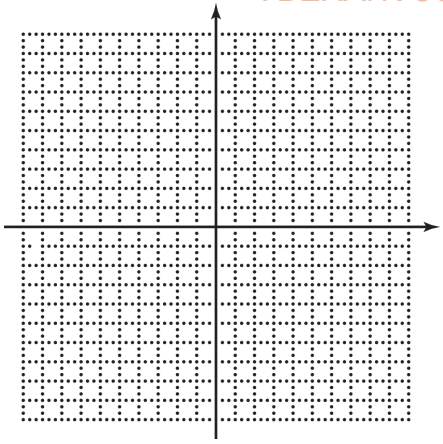
13) The sum of two numbers is 90. Determine if the numbers have a maximum or minimum product and find that product. 13) _____

14) Graph $f(x) = \dfrac{x-3}{x^2-2x-15}$. List all intercepts and asymptotes.



14) _____

15) Graph $f(x) = \dfrac{2x^2+5x-3}{x^2-25}$. List all intercepts and asymptotes.



15) _____