Precalculus A Unit Circle Approach 4th edition Ratti Test Bank

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INSTRUCTOR'S TESTING MANUAL

JAMES LAPP

PRECALCULUS
A UNIT CIRCLE APPROACH
FOURTH EDITION

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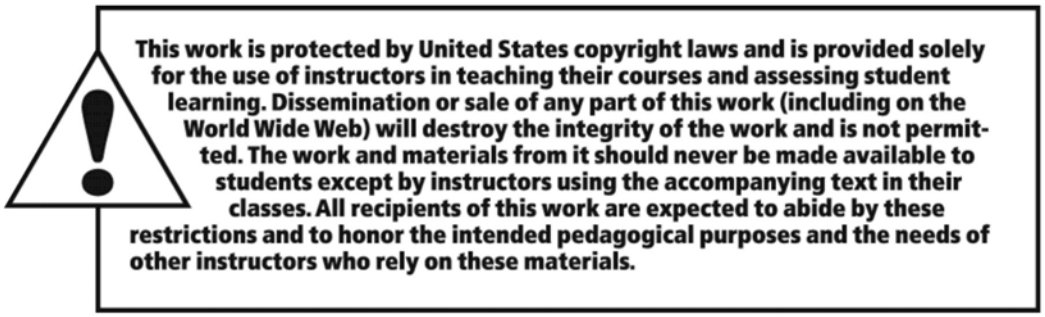

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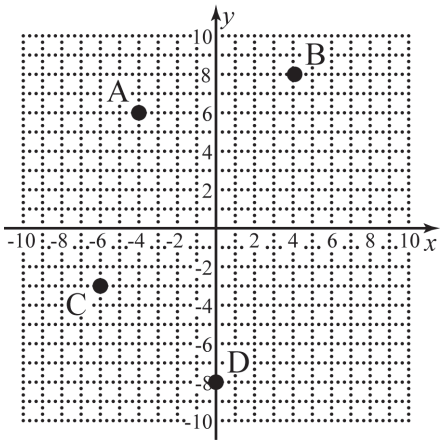
Test Forms A, B, C, and D are Free Response
Test Forms E and F are Multiple Choice

Chapter 1 Test Form A Name _____

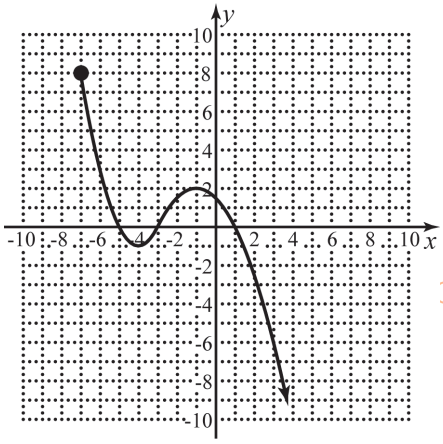
Ratti, *Precalculus: A Unit Circle Approach, 4e*

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) _____

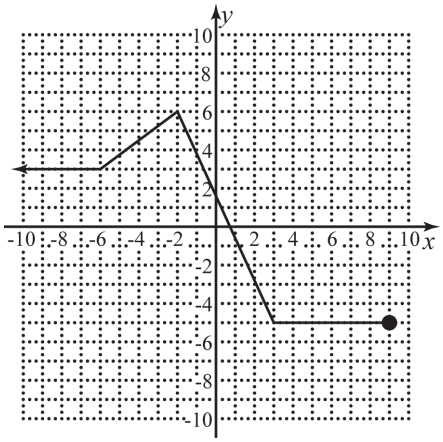
9) Find the domain of $f(x) = \sqrt{x^2 + 2x - 15}$. Write the answer using interval notation.

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) _____

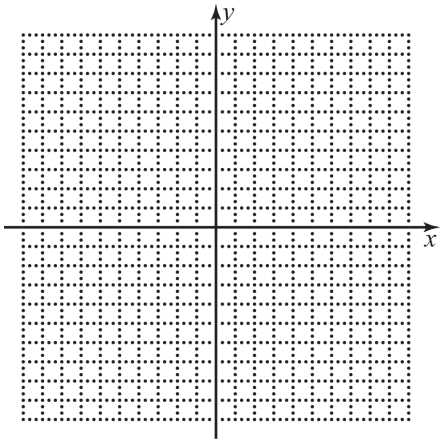
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



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.

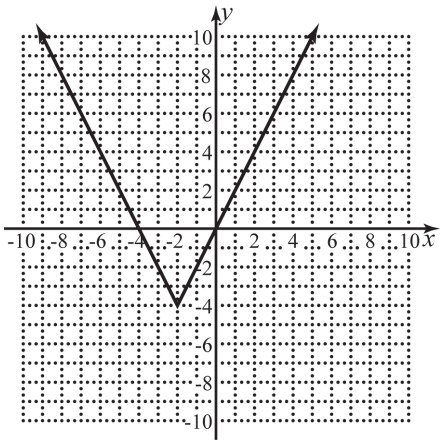


14) _____

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.

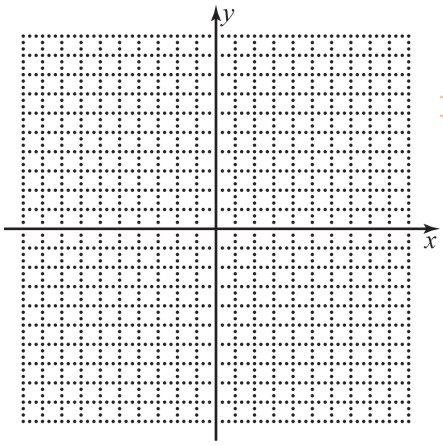


17) _____

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

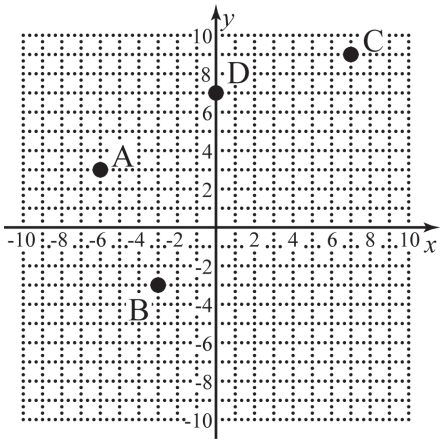
18) _____

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 $f(6)$.



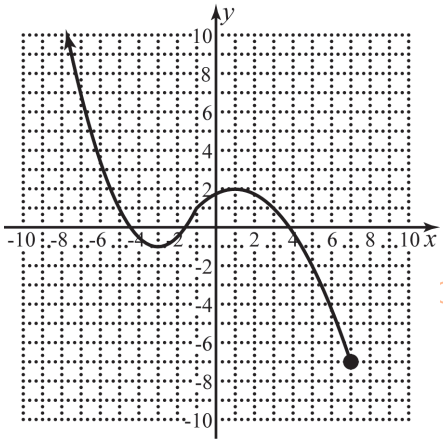
19) _____

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) _____

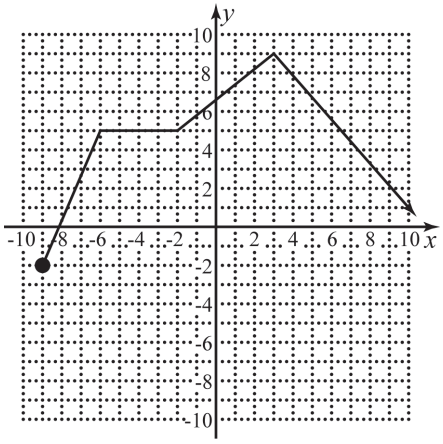
9) Find the domain of $f(x)=\sqrt{x^2+4x-12}$. Write the answer using interval notation.

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) _____

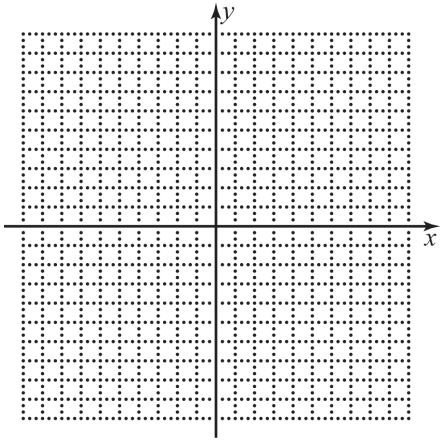
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



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.

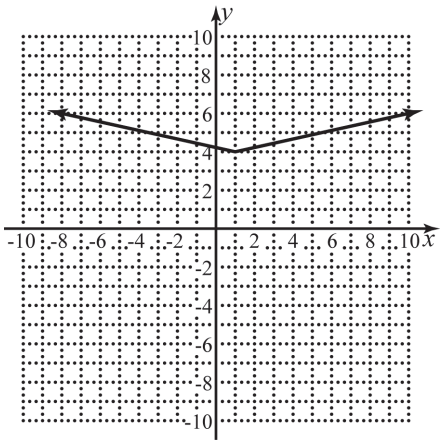


14) _____

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.

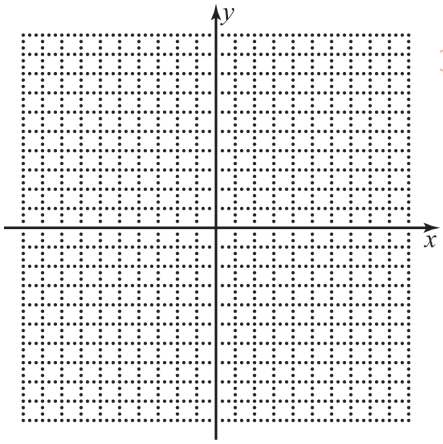


17) _____

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

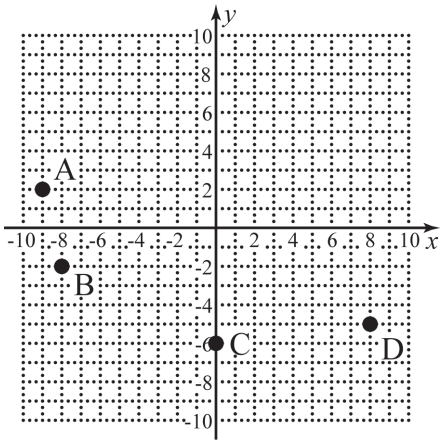
18) _____

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 $f(2)$.



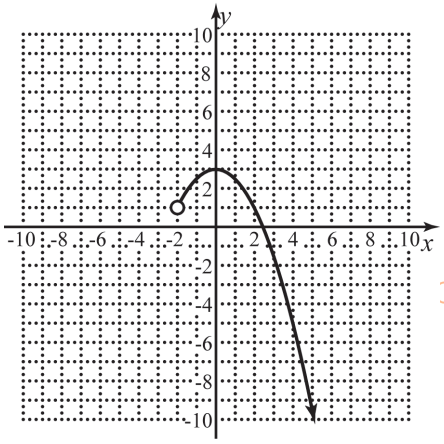
19) _____

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) _____

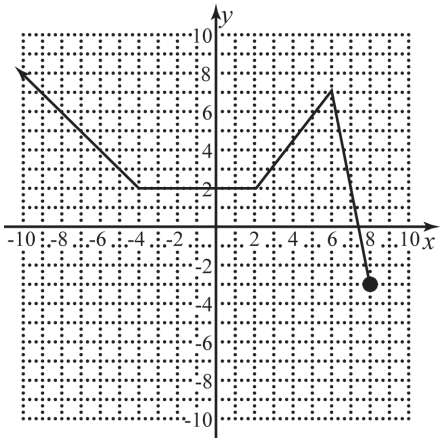
9) Find the domain of $f(x)=\sqrt{x^2+2x-24}$. Write the answer using interval notation.

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) _____

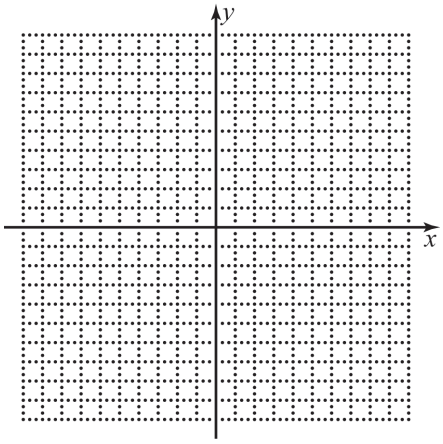
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



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.

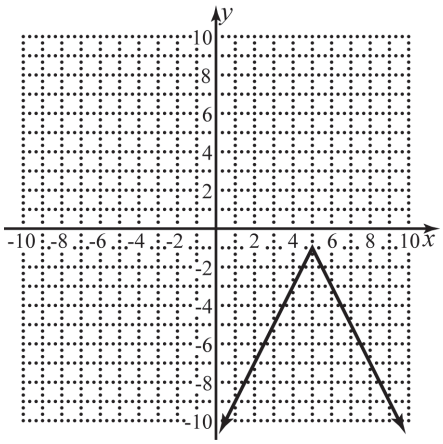


14) _____

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.

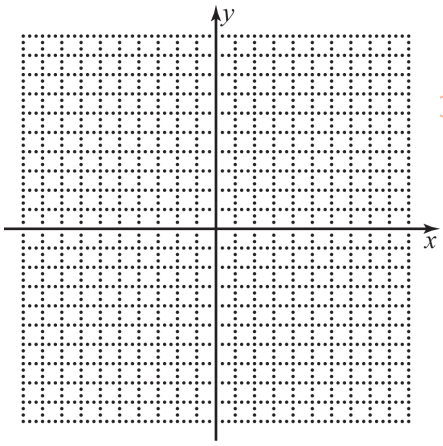


17) _____

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

18) _____

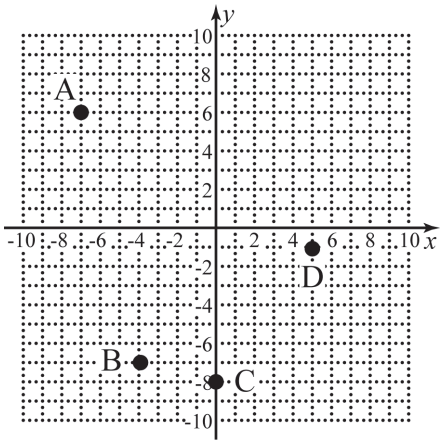
19) Graph $f(x)=\begin{cases} 3 & \text{if } x>4 \\ -x+1 & \text{if } x\le 4 \end{cases}$. Find the values of $f(-4)$, $f(4)$, and $f(8)$.



19) _____

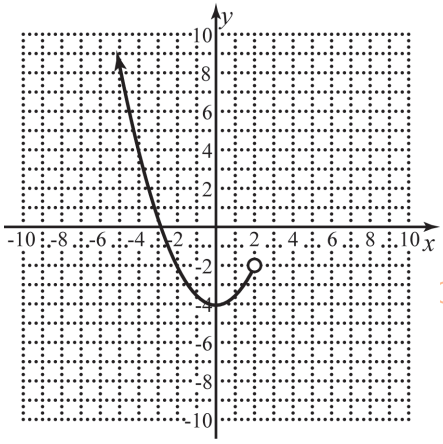
Name _____

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) _____

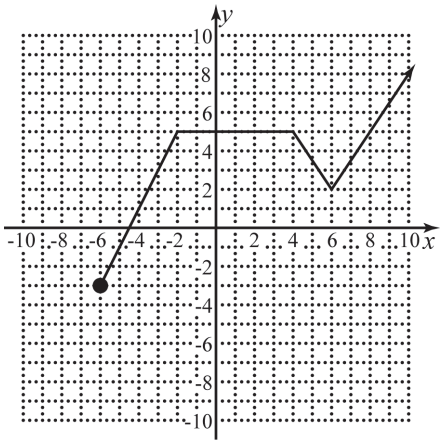
9) Find the domain of $f(x) = \sqrt{x^2 - 3x - 10}$. Write the answer using interval notation.

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) _____

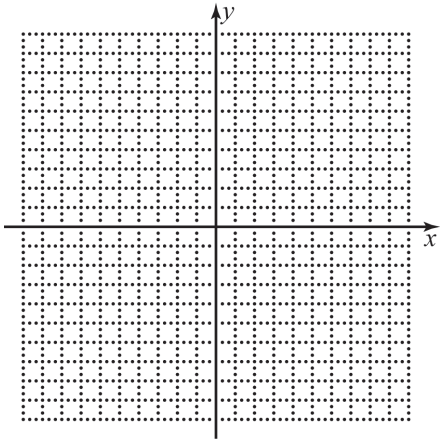
12) Given the following graph determine: a) where is the graph increasing, b) where is the graph decreasing, and c) where is the graph constant.



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.

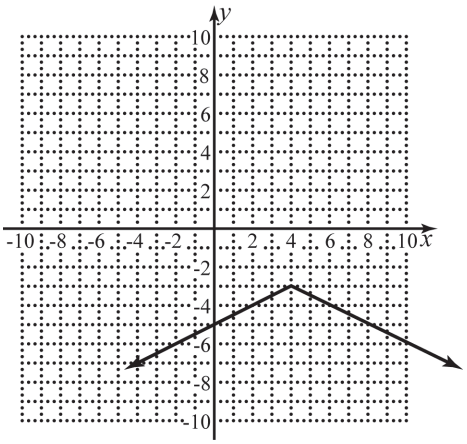


14) _____

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.

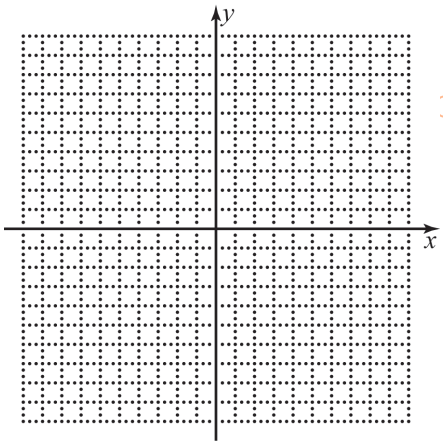


17) _____

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

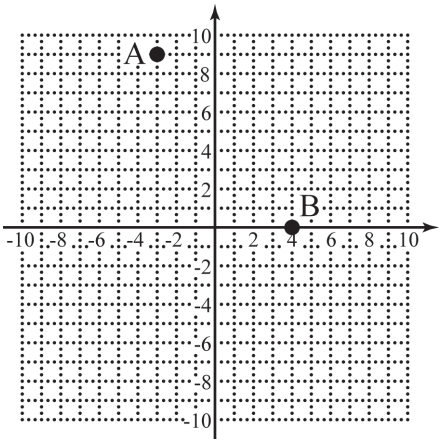
18) _____

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) _____

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



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

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

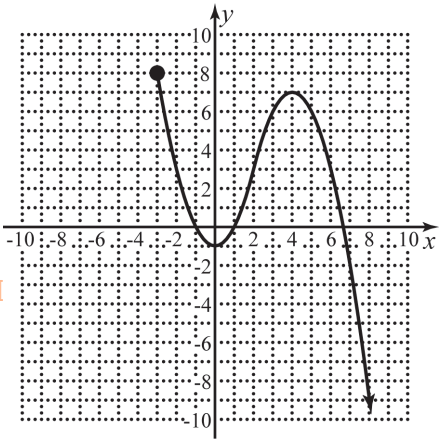
c) $(9,-3)$ d) $(-9,3)$

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

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

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

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

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

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

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

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

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

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. 7) _____

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. 8) _____

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

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) $(-\infty,-2]\cup[7,\infty)$

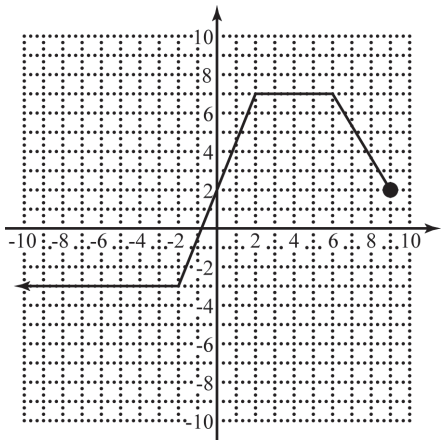
13) Given $f(x) = \sqrt[3]{x-27}$, find $f^{-1}(x)$. 13) _____

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

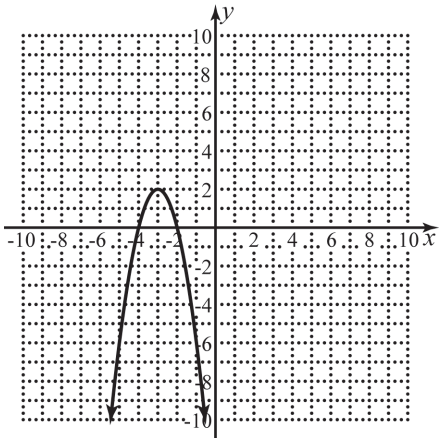
18) Determine which symmetries the graph of $xy^2 + x^3 = xy^4$ possesses. 18) _____

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

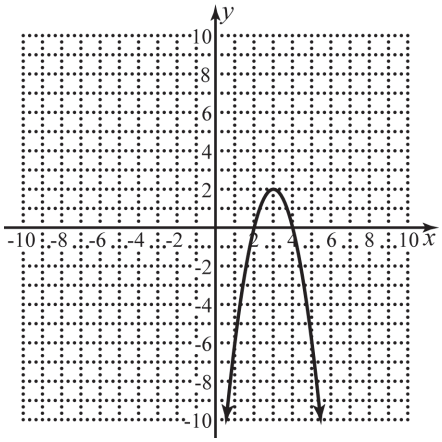
Name _____

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

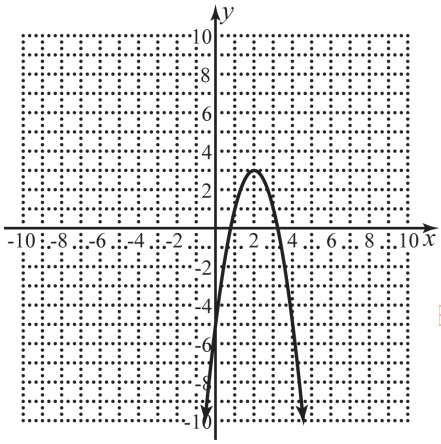
a)



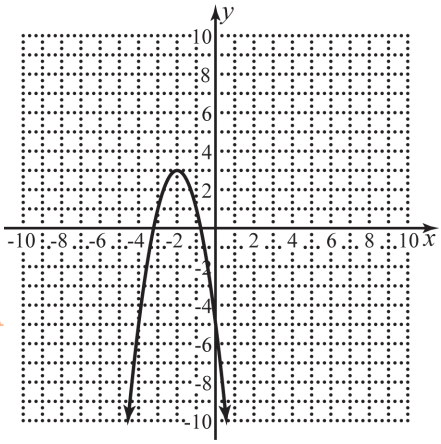
b)



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

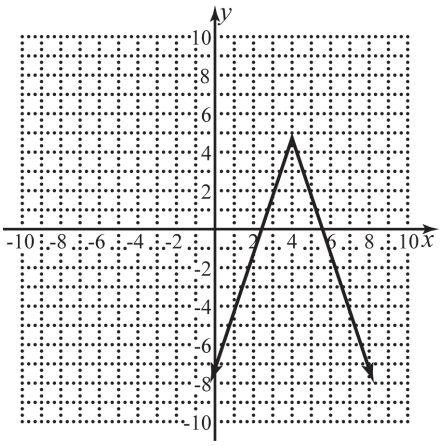
21) A company charges \$35 to design a custom coffee mug and \$9 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$250. 21) _____

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

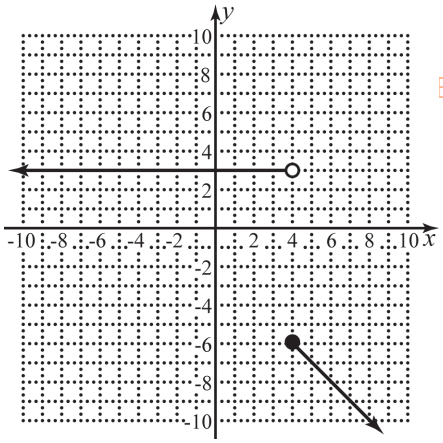
24) Find the average rate of change of $f(x) = x^2 - 2x$ as x changes from $a = -4$ to $b = 3$. 24) _____

a) 27/7 b) $-5/7$ c) -3 d) 21

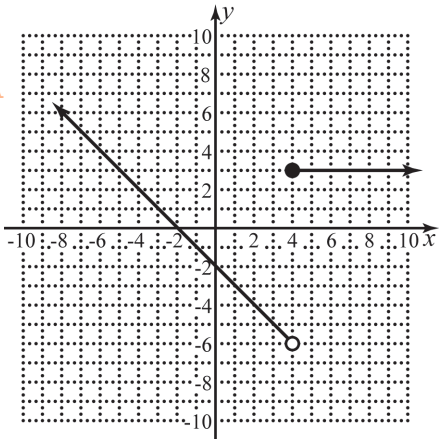
In exercises 25–27, use $f(x) = \begin{cases} -x-2 & \text{if } x \le 4 \\ 3 & \text{if } x > 4 \end{cases}$.

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

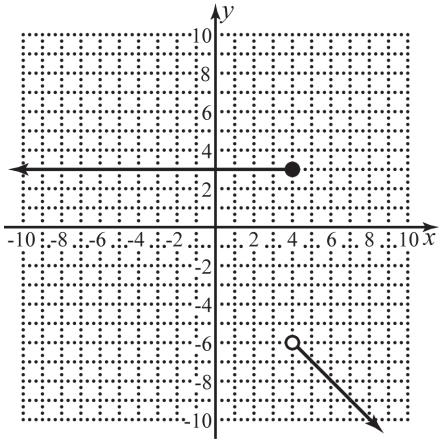
a)



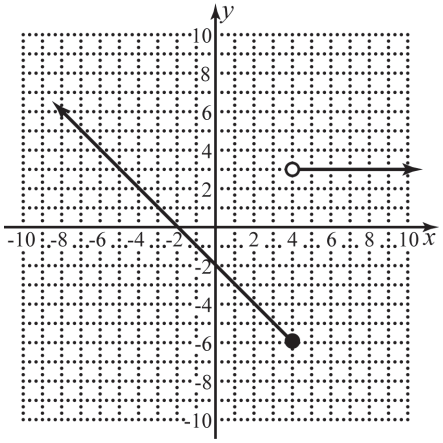
b)



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

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

1) What are the coordinates of point A?

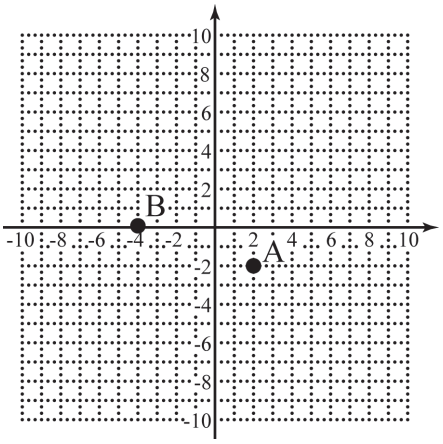
a) $(2,-2)$ b) $(-2,2)$

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

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.

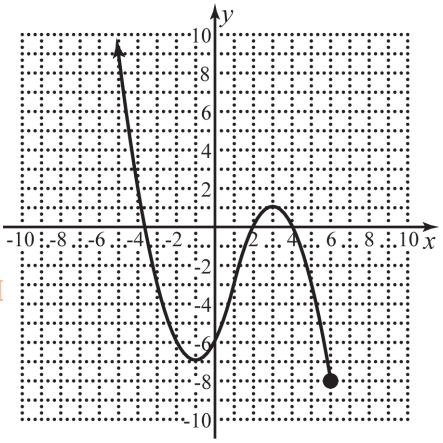
a) $(-\infty,6]$ b) $(-\infty,6)$

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

4) Determine the range of the function.

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

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



3) _____

4) _____

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

5) Find the distance between the points.

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

5) _____

6) Find the midpoint between the points.

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

6) _____

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

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

7) _____

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

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

8) _____

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

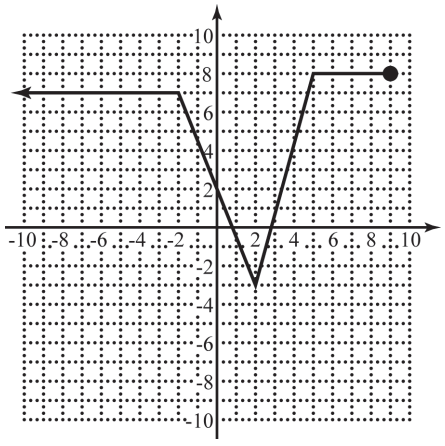
a) $f^{-1}(x)=\frac{5x+4}{x}$ b) $f^{-1}(x)=\frac{x-5}{4}$

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

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) _____

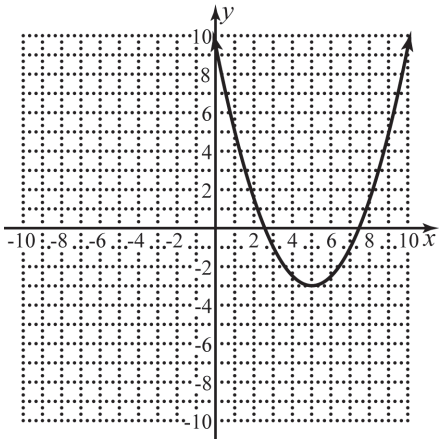
a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$

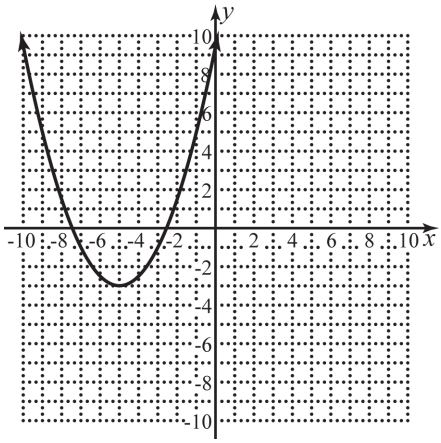
c) $(-2,2)$ d) Never

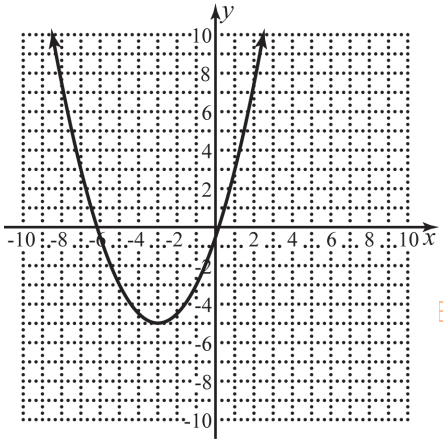
18) Determine which symmetries the graph of $x^2y^2-y^4=x$ possesses. 18) _____

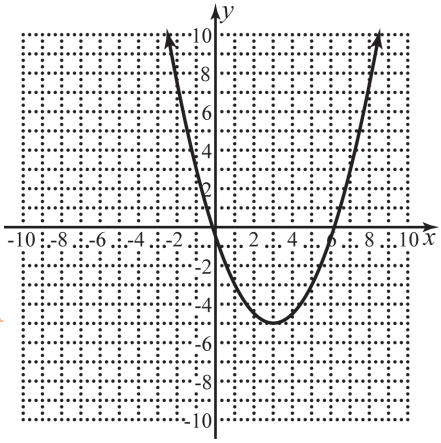
a) x-axis b) y-axis c) origin d) all

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

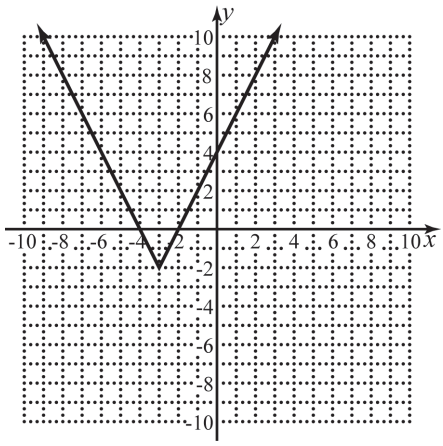
21) A company charges \$45 to design a custom coffee mug and \$14 each to make them. Find the function, $C(x)$, that represents the cost to purchase x coffee mugs and determine how many could be purchased with \$350. 21) _____

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

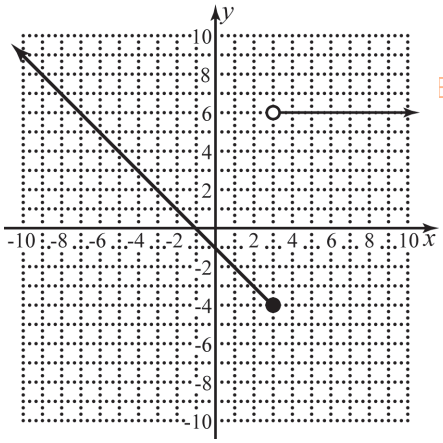
24) Find the average rate of change of $f(x) = x^3 + 8x$ as x changes from $a = -2$ to $b = 1$. 24) _____

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

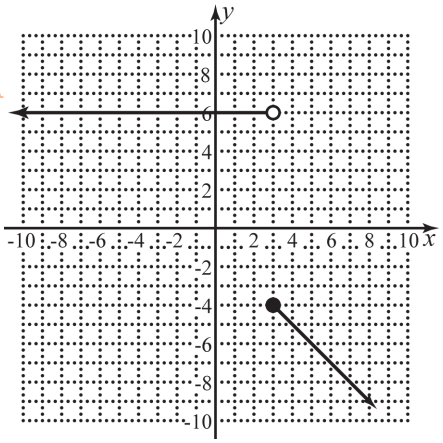
In exercises 25–27, use $f(x) = \begin{cases} -x-1 & \text{if } x \geq 3 \\ 6 & \text{if } x < 3 \end{cases}$.

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

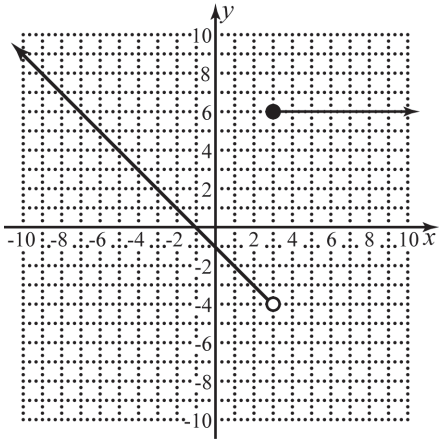
a)



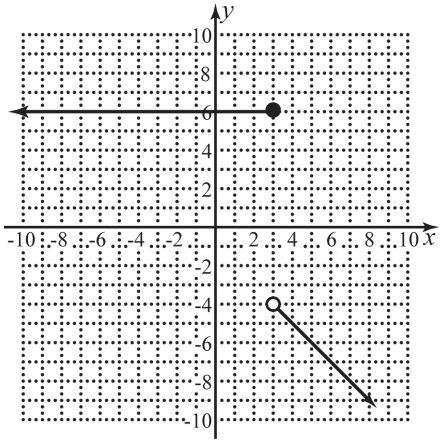
b)



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

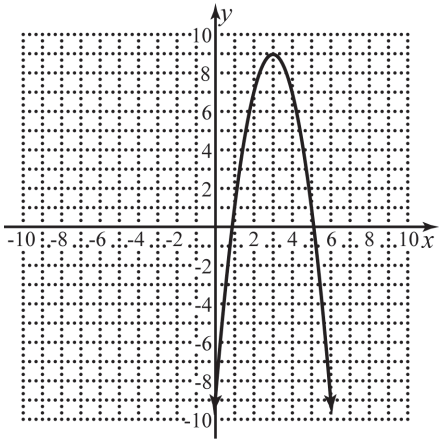
10) $f^{-1}(x)=\dfrac{x+11}{4}$

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

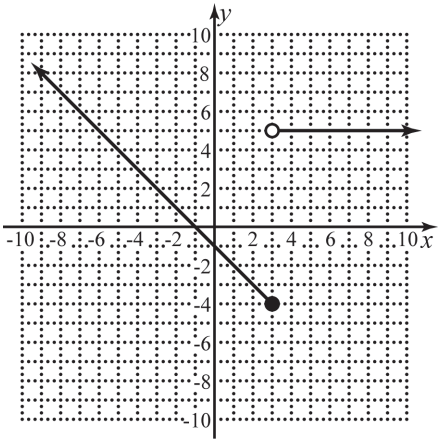
15) $C(x)=13x+50$; 26 mugs

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

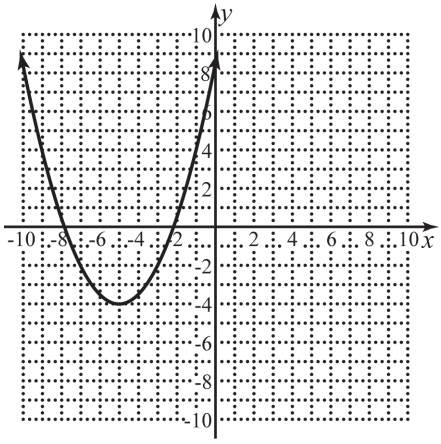
10) $f^{-1}(x)=\dfrac{x+8}{3}$

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

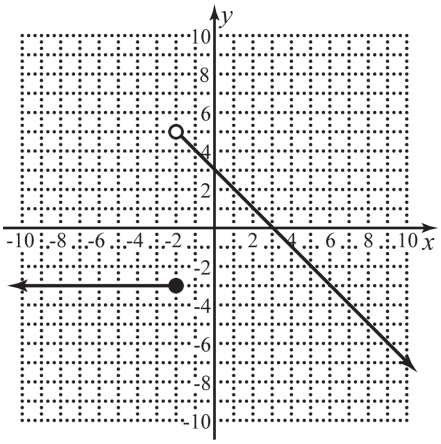
15) $C(x)=11x+40$; 23 mugs

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

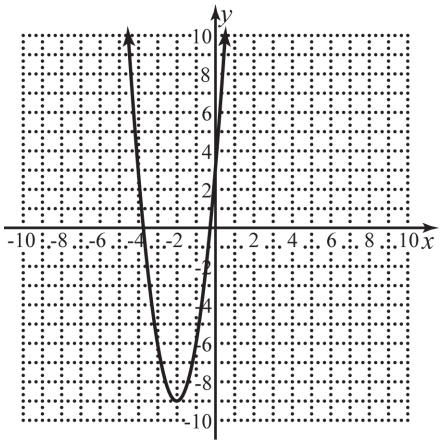
10) $f^{-1}(x)=\dfrac{x+5}{8}$

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

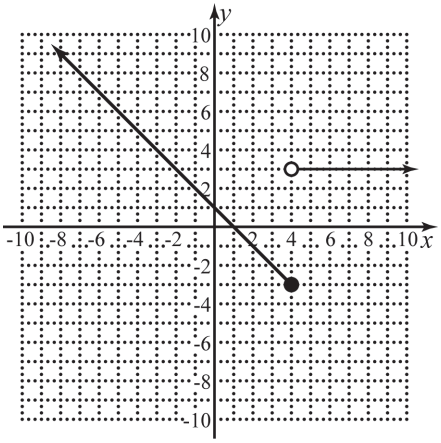
15) $C(x)=14x+60$; 27 mugs

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

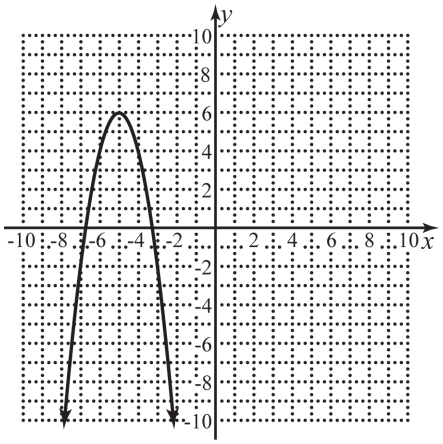
10) $f^{-1}(x)=\dfrac{11-x}{5}$

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

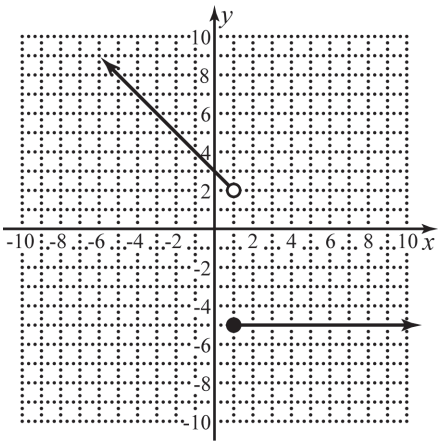
15) $C(x)=12x+45$; 37 mugs

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 _____

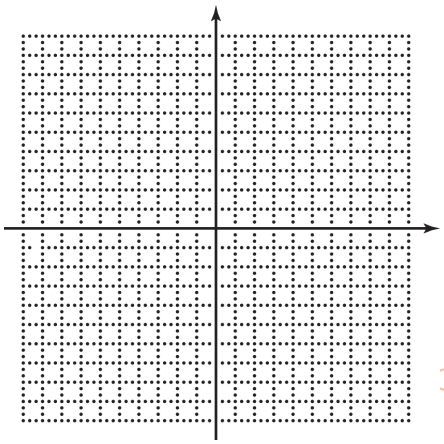
Ratti, *Precalculus: A Unit Circle Approach, 4e*

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) _____

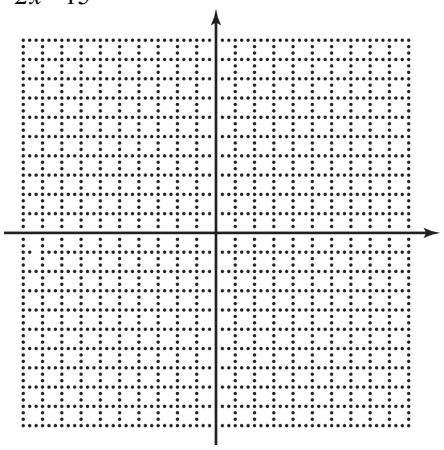
12) The cost, in dollars, to produce x items is given by $C = 20x + 400$. If the demand function is given by $p = 500 - 10x$, find the value of x that maximizes profit and state that maximum profit.

12) _____

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

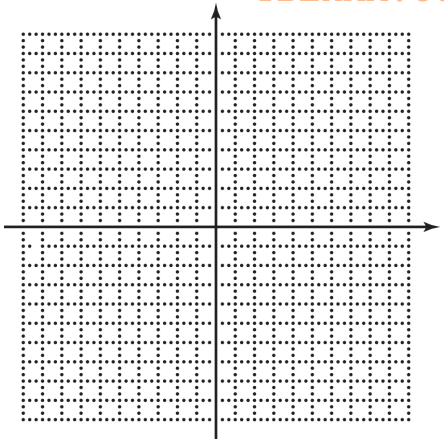
13) _____

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) _____