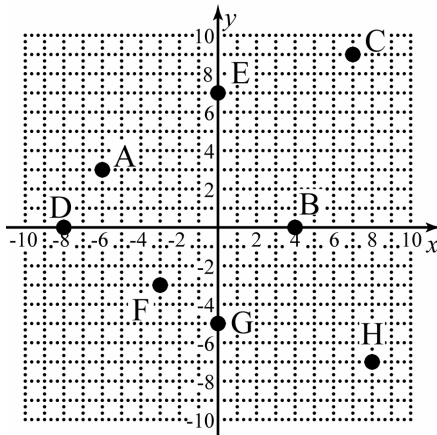Precalculus
a unit circle approach

Ratti & McWaters

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

1) _____

2)   Find the distance and midpoint between $(-4,3)$ and $(10,-11)$.   2) _____

3)   Write the equation of the circle centered at $(-3,4)$ with a radius of 8.   3) _____

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

In exercises 5–8, find the equation of the following lines. Write your answer in slope-intercept form.

5)   Passing through $(5,-3)$ with slope -2.   5) _____

6)   Passing through $(-3,7)$ and $(1,5)$.   6) _____

7)   Parallel to $-3x + 2y = -5$ passing through $(3,-2)$.   7) _____

8)   Find the equations of the horizontal and vertical line passing through $(5,8)$.   8) _____

9)   Find the domain of the following function. Write your answer using
        interval notation.

$$f(x) = \frac{x-2}{(x-4)(x+1)}$$

        9) _____

10)   Determine which symmetries the graph of the following equation
        possesses.
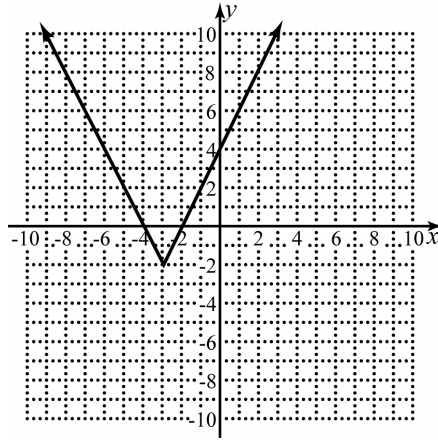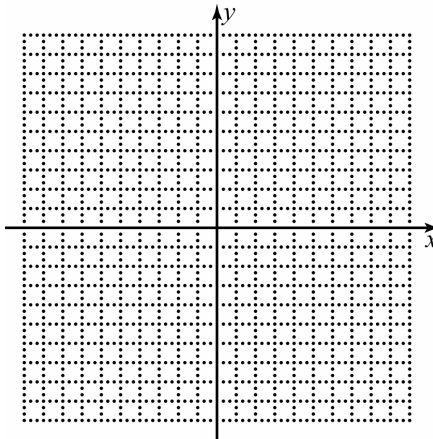
$$x^2 - y^2 = 4$$

        10) _____

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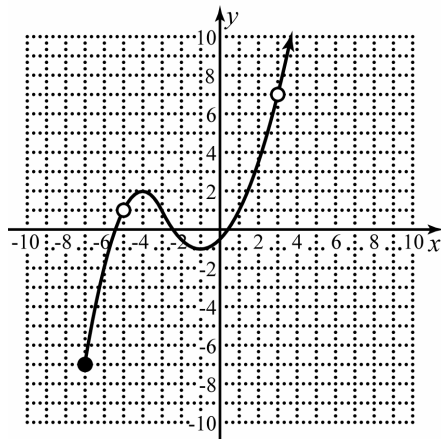

11) _____

12)   List the transformations to the basic graph and graph the function.
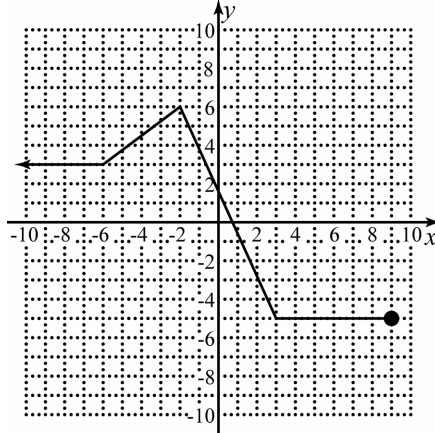
$$f(x) = -2(x-3)^2 + 9$$

12) _____

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

13) _____

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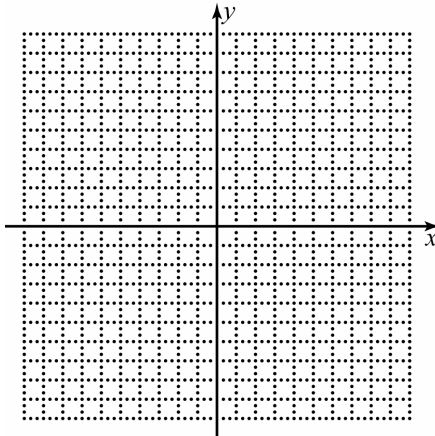

14) _____

15)   Find the *x*- and *y*-intercepts of the following equation.

$$y = x^2 + 2x - 15$$

15) _____

16)   Graph the function given below and determine the given functional values.

$$f(x) = \begin{cases} (3-x)^2 - 4 & if \quad x \le 3 \\ 5 & if \quad x > 3 \end{cases}; \quad f(-3), f(3), f(6)$$

16) _____

17)   Find $\frac{f(x+h)-f(x)}{h}$ for $f(x) = x^2 + 2x$

17) _____

18)   Given $f(x)$ and $g(x)$, find $(f \circ g)(x)$ and determine its domain.

$$f(x) = 2x^2 - 5, g(x) = \sqrt{x-5}$$

18) _____

19)   Find $f^{-1}(x)$ for $f(x)=3x-7$ 19) _____

20)   A company that produced toy cars has a monthly a monthly cost of 1,500
      dollars and a marginal cost of 3 dollars per toy car. The company makes 8
      dollars per toy car in revenue.

      a) Find the function, $C(x)$, that represents the cost of producing x toy
      cars.

      b) Find the function, $R(x)$, that represents the revenue from selling x toy
      cars.

      c) Find the function, $P(x)$, that represents the profit from selling x toy
      cars.

      d) What would the profit be from selling 2500 toy cars?   20) _____

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

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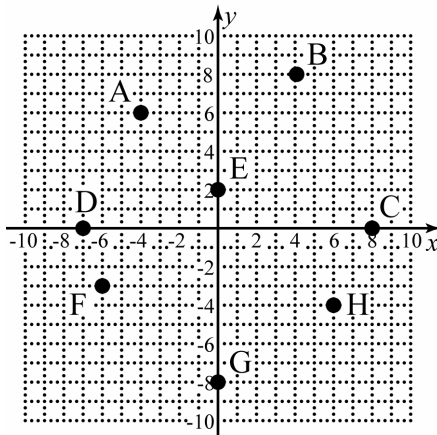
2) Find the distance and midpoint between $(5,-7)$ and $(1,1)$.

2) _____

3) Write the equation of the circle centered at $(5,-2)$ with a radius of 4.

3) _____

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

4) _____

In exercises 5–8, find the equation of the following lines. Write your answer in slope-intercept form.

5) Passing through $(-4,3)$ with slope 5.

5) _____

6) Passing through $(4,1)$ and $(-1,-3)$.

6) _____

7) Perpendicular to $2x+3y=7$ passing through $(4,7)$

7) _____

8) Find the equations of the horizontal and vertical line passing through $(-8,6)$.

8) _____

9) Find the domain of the following function. Write your answer using interval notation.
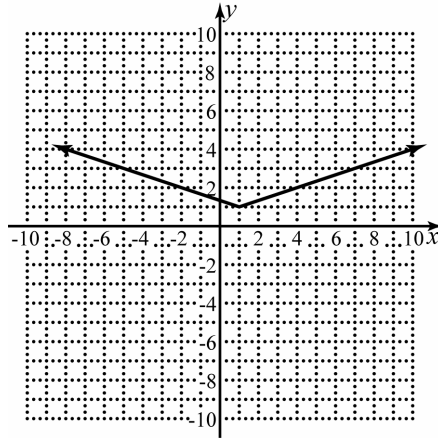
$$f(x)= \sqrt{8-2x} +\sqrt{x+5}$$

9) _____

10) Determine which symmetries the graph of the following equation possesses.
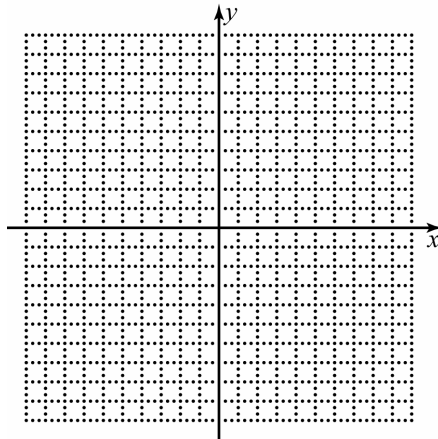
$$y = x^4 - x^2$$

10) _____

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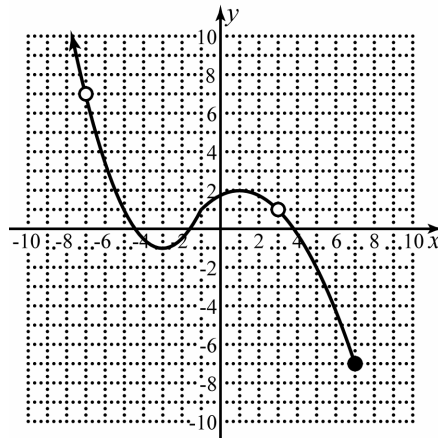

11) _____

12)   List the transformations to the basic graph and graph the function.

$f(x) = \frac{1}{2}(x+5)^2 - 4$

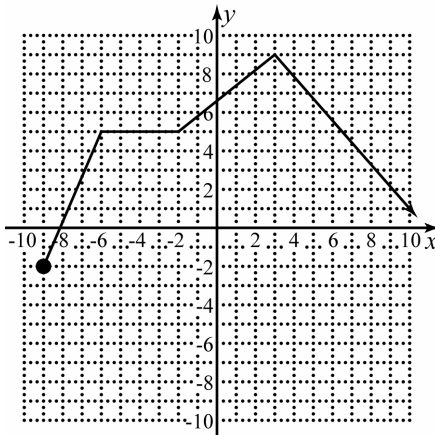12) _____

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

13) _____

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

14) _____

15) Find the *x*- and *y*-intercepts of the following equation.

$$y = \sqrt{2x+16}$$

15) _____

16) Graph the function given below and determine the given functional values.

$$f(x) = \begin{cases} |3-x| & if \quad x > -2 \\ -3 & if \quad x \le -2 \end{cases}; \qquad f(-2), f(2), f(-1)$$

16) _____
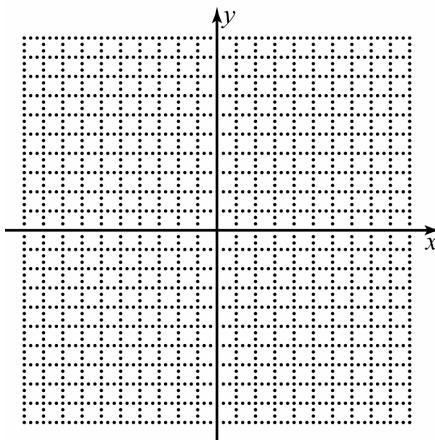
17) Find $\dfrac{f(x+h)-f(x)}{h}$ for $f(x) = 3x - 2x^2$

17) _____

18) Given $f(x)$ and $g(x)$, find $(f \circ g)(x)$ and determine its domain.

$$f(x) = \frac{x^2+1}{x^2+7}, g(x) = \sqrt{x+7}$$

18) _____

19)   Find $f^{-1}(x)$ for $f(x) = \dfrac{5}{x+3}$

19) _____

20)   A company that produced toy cars has a monthly a monthly cost of 2,000
      dollars and a marginal cost of 8 dollars per toy car. The company makes 15
      dollars per toy car in revenue.

      a) Find the function, $C(x)$, that represents the cost of producing x toy
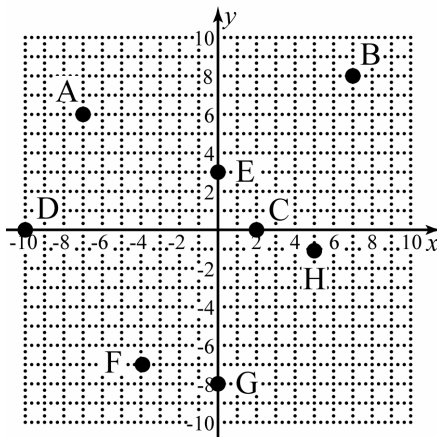   cars.

      b) Find the function, $R(x)$, that represents the revenue from selling x toy
      cars.

      c) Find the function, $P(x)$, that represents the profit from selling x toy
      cars.

      d) What would the profit be from selling 3250 toy cars?   20) _____

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

1) _____

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

2) _____

3) Write the equation of the circle centered at $(-3,5)$ with a radius of 6.

3) _____

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

4) _____

In exercises 5–8, find the equation of the following lines. Write your answer in slope-intercept form.

5) Passing through $(1,-2)$ with slope -3 .

5) _____

6) Passing through $(-2,1)$ and $(4,-4)$.

6) _____

7) Parallel to $5x - 3y = 4$ passing through $(-10,3)$

7) _____

8) Find the equations of the horizontal and vertical line passing through $(-3,-4)$.

8) _____

9) Find the domain of the following function. Write your answer using interval notation.

$$f(x) = \frac{x}{x-2} + \frac{x}{x+4}$$
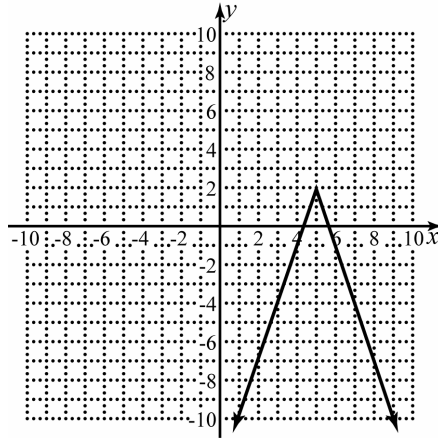
9) _____

10) Determine which symmetries the graph of the following equation possesses.
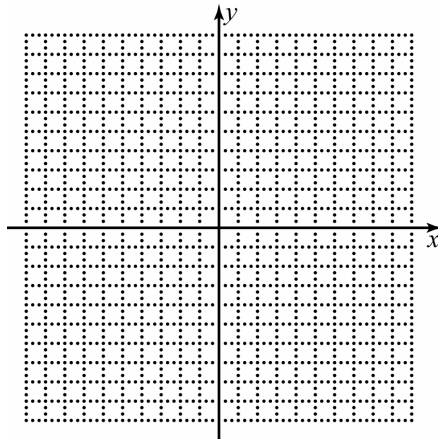
$$x^3 y^2 + x = 4$$

10) _____

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

11) _____

12)   List the transformations to the basic graph and graph the function.

$$f(x) = 3(x+2)^2 - 9$$

12) _____

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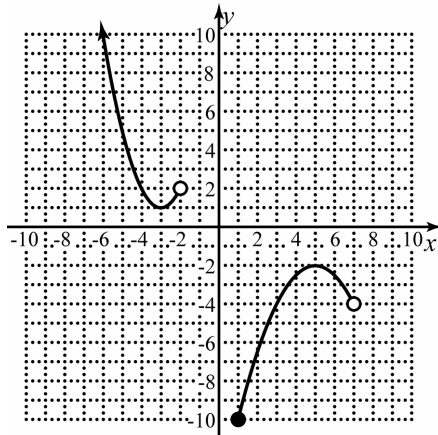
13) _____

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

14) _____
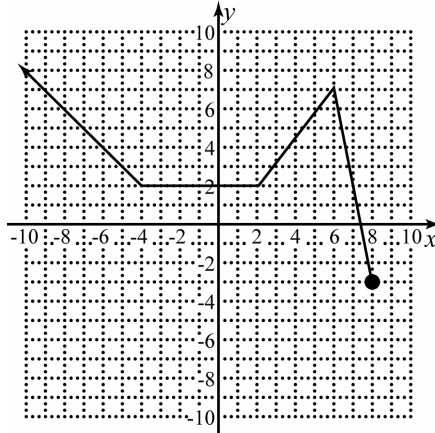
15)   Find the *x*- and *y*-intercepts of the following equation.

$$y = \sqrt[3]{2x+8}$$

15) _____

16)   Graph the function given below and determine the given functional values.

$$f(x) = \begin{cases} 3 & \text{if} \quad x > 4 \\ 3-2x & \text{if} \quad x \le 4 \end{cases}; f(-4), f(4), f(8)$$

16) _____
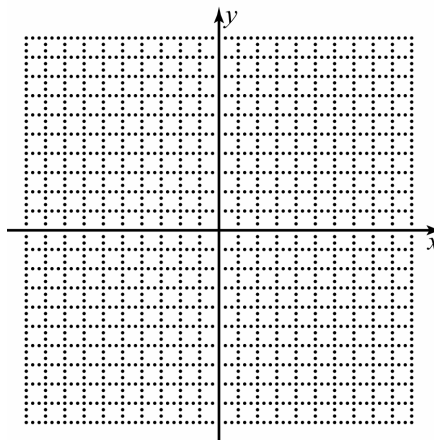
17)   Find $\frac{f(x+h)-f(x)}{h}$ for $f(x) = 4x^2 - 7x$.

17) _____

18)   Given $f(x)$ and $g(x)$, find $(f \circ g)(x)$ and determine its domain.

$$f(x) = 3x^2 + 2, g(x) = \sqrt{7-x}$$

18) _____

19)   Find $f^{-1}(x)$ for $f(x) = x^3 + 8$

19) _____

20)   A company that produced toy cars has a monthly a monthly cost of 1,800
       dollars and a marginal cost of 5 dollars per toy car. The company makes 13
       dollars per toy car in revenue.

       a) Find the function, $C(x)$, that represents the cost of producing x toy
       cars.

       b) Find the function, $R(x)$, that represents the revenue from selling x toy
       cars.

       c) Find the function, $P(x)$, that represents the profit from selling x toy
       cars.

       d) What would the profit be from selling 1500 toy cars?   20) _____

Ratti & McWaters, *College Algebra and Trigonometry and Precalculus*

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

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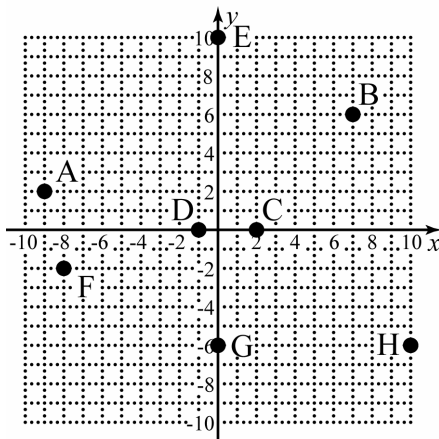
2)   Find the distance and midpoint between $(-6,1)$ and $(4,-9)$.

2)   _____

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

3)   _____

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

4)   _____

In exercises 5–8, find the equation of the following lines. Write your answer in slope-intercept form.

5)   Passing through $(-2,3)$ with slope 4

5)   _____

6)   Passing through $(-1,-2)$ and $(4,2)$

6)   _____

7)   Perpendicular to $-4x - 3y = 5$ passing through $(-8,5)$

7)   _____

8)   Find the equations of the horizontal and vertical line passing through
      $(2,-7)$.

8)   _____

9)   Find the domain of the following function. Write your answer using
      interval notation.

      $$f(x) = \frac{x+3}{(x-2)(x+5)}$$

9)   _____

10)   Determine which symmetries the graph of the following equation
      possesses.

      $$y = 3x^5 - 4x^3$$

10) _____

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

11) _____
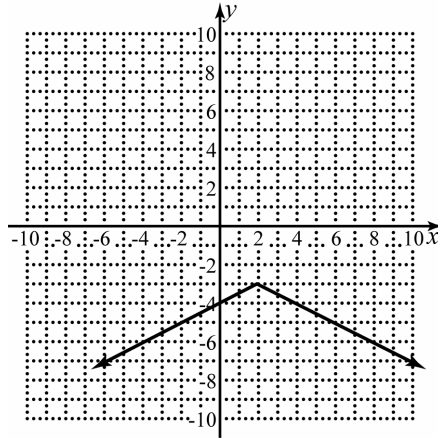
12) List the transformations to the basic graph and graph the function.

$$f(x) = -2(x+5)^2 + 6$$

12) _____

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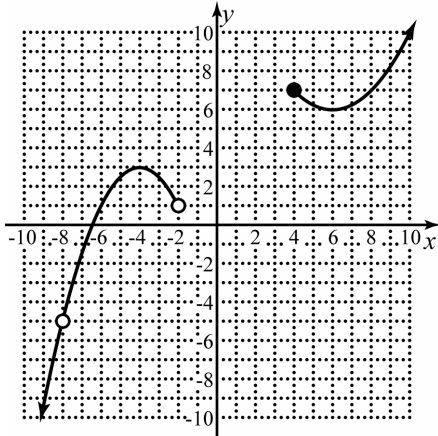
13) _____

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


14) _____
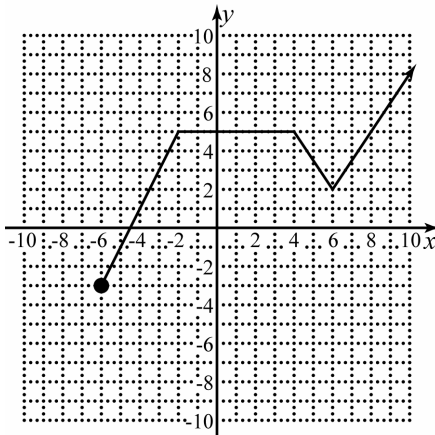
15) Find the *x*- and *y*-intercepts of the following equation.

$$y = x^2 - 25$$

15) _____

16) Graph the function given below and determine the given functional values.

$$f(x) = \begin{cases} -x^2 + 9 & \text{if} \quad x < 1 \\ -5 & \text{if} \quad x \geq 1 \end{cases}; \qquad f(-1), f(1), f(5)$$

16) _____
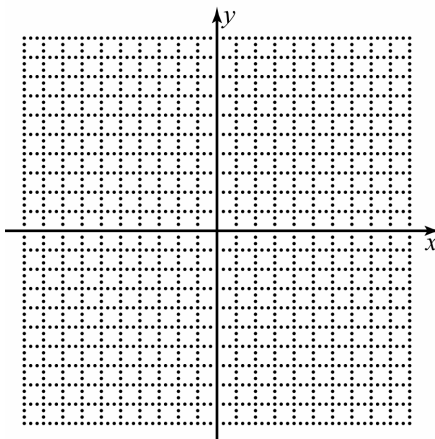
17) Find $\dfrac{f(x+h) - f(x)}{h}$ for $f(x) = x^3 + x$

17) _____

18) Given $f(x)$ and $g(x)$, find $(f \circ g)(x)$ and determine its domain.

$$f(x) = \frac{x^2}{x^2 + 3}, g(x) = \sqrt{x - 2}$$

18) _____

19) Find $f^{-1}(x)$ for $f(x)=8-3x$

19) _____

20) A company that produced toy cars has a monthly a monthly cost of 2,400
     dollars and a marginal cost of 10 dollars per toy car. The company makes
     25 dollars per toy car in revenue.

   a) Find the function, $C(x)$, that represents the cost of producing x toy
   cars.

   b) Find the function, $R(x)$, that represents the revenue from selling x toy
   cars.

   c) Find the function, $P(x)$, that represents the profit from selling x toy
   cars.

   d) What would the profit be from selling 600 toy cars?

20) _____

Ratti & McWaters, *College Algebra and Trigonometry and Precalculus*

In exercises 1–4, refer to the graph to the right.
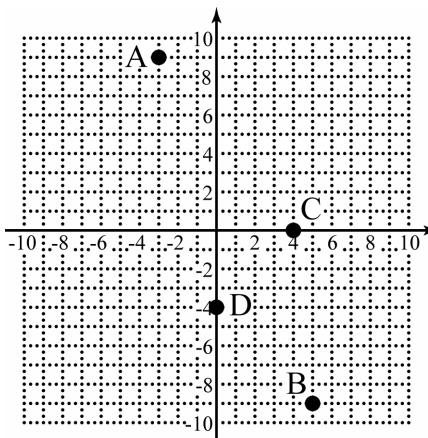
1) What are the coordinates of point A?

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

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

2) What are the coordinates of point B?

   a) $(-5,9)$ b) $(-5,-9)$

   c) $(-9,5)$ d) $(5,-9)$

3) What are the coordinates of point C?

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

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

4) What are the coordinates of point D?

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

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

1) _____

2) _____

3) _____

4) _____

In exercises 5–6, use the points $(-2,1)$ and $(6,-7)$.

5) Find the distance between the points.

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

5) _____

6) Find the midpoint between the points.

   a) $(4,-4)$ b) $(2,-3)$ c) $(-4,4)$ d) $(-2,3)$

6) _____

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

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

   c) $(x+4)^2+(y-5)^2=9$ d) $(x-4)^2+(y+5)^2=9$

7) _____

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

   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) $(x-4)^2+(y+5)^2=59$

8) _____

In exercises 9–12, find the equation of the following lines. Write your answer in slope-intercept form.

9) Passing through $(-1,4)$ with slope 3.   9) _____

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

10) Passing through $(-4,3)$ and $(2,4)$.   10) _____

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

11) Parallel to $2x + 5y = 13$ passing through $(5,-3)$.   11) _____

   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) $y = -\frac{2}{5}x - 1$

12) Find the equations of the horizontal line passing through $(7,-6)$.   12) _____

   a) $x = -6$ b) $y = -6$ c) $x = 7$ d) $y = 7$

13) Find the equations of the horizontal passing through $(-1,-3)$.   13) _____

   a) $x = -1$ b) $y = -1$ c) $x = -3$ d) $y = -3$

14) Find the domain of $f(x) = \dfrac{x+3}{\sqrt{5x+20}}$. Write your answer using interval notation.   14) _____

   a) $[-4,\infty)$ b) $(-4,\infty)$ c) $[4,\infty)$ d) $(4,\infty)$

15) Determine which symmetries the graph of the $xy + x^3 = y$ possesses.   15) _____

   a) x-axis   b) y-axis   c) origin   d) none

16) Write the formula for the function graphed to the right   16) _____

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

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

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

   d) $f(x) = -3|x-4| + 5$
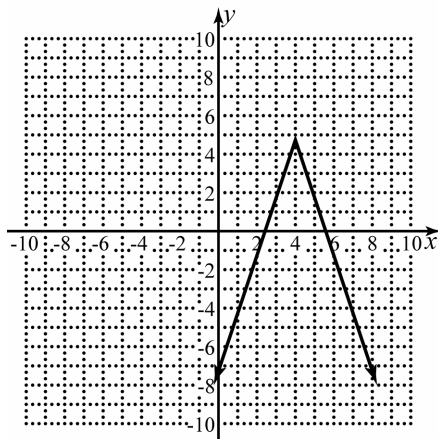
17) Which of the following is not a transformation of the basic function in   17) _____
$g(x) = \frac{1}{2}(x+3)^2 - 1$

   a) vertical shift of 1 down   b) vertical reflection

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

18) Graph $f(x) = -2(x-3)^2 + 2$ 18) _____

a)

b)

c)

d)

In exercises 19–20, refer to the graph to the right.

19)   Determine the domain of the function.

a) $(-\infty, 4]$
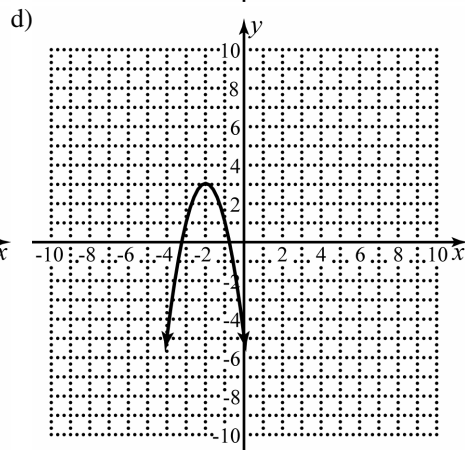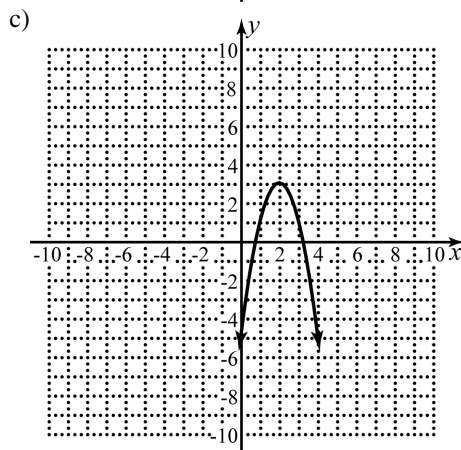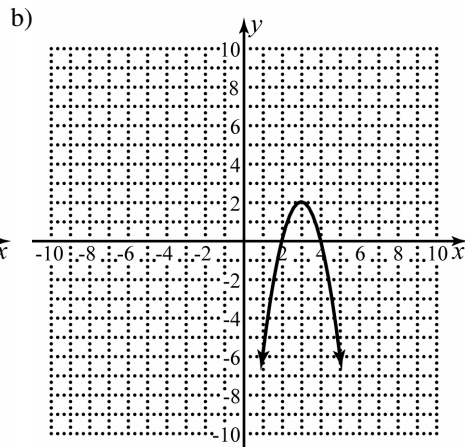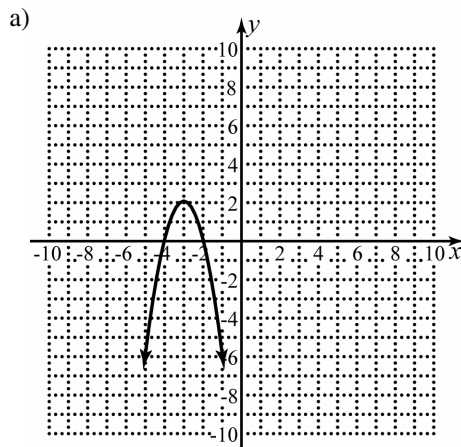
b) $(-\infty, -6) \cup (-6, -1) \cup (-1, 4]$

c) $(-\infty, -3) \cup (-3, 7]$

d) $(-\infty, 7]$
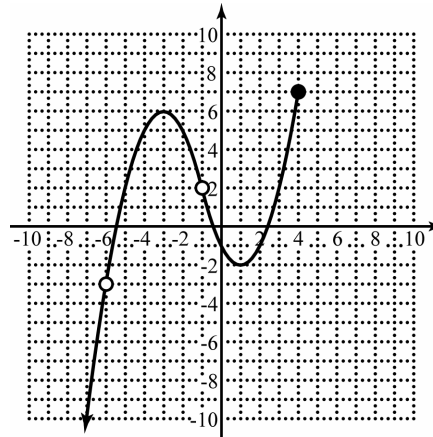
20)   Determine the range of the function.

a) $(-\infty, 4]$

b) $(-\infty, -6) \cup (-6, -1) \cup (-1, 4]$

c) $(-\infty, -3) \cup (-3, 7]$

d) $(-\infty, 7]$

19) _____

20) _____

In exercises 21–23, refer to the graph to the right.

21)   When is the graph to the right increasing?

a) $(-2, 2)$ b) $(6, 9)$

c) $(-\infty, -2) \cup (2, 6)$ d)   Never
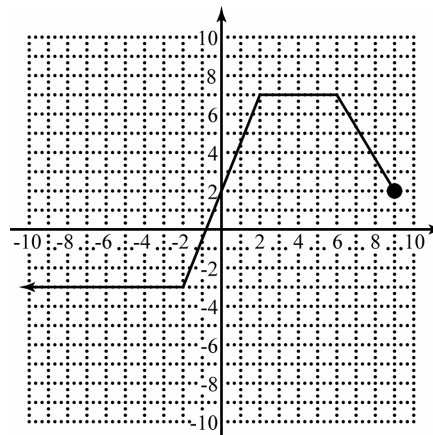
22)   When is the graph to the right decreasing?

a) $(-2, 2)$ b) $(6, 9)$

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

23)   When is the graph to the right constant?

a) $(-2, 2)$ b) $(6, 9)$

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

21) _____

22) _____

23) _____

24)   Find the coordinates of the intercepts of $y = x^2 - x - 30$

a) $(30, 0), (0, 5), (0, -6)$ b) $(30, 0), (0, -5), (0, 6)$

c) $(0, -30), (5, 0), (-6, 0)$ d) $(0, -30), (-5, 0), (6, 0)$

24) _____

In exercises 25–28, use $f(x) = \begin{cases} ||2-x|-5 & if & x \le 4 \\ 3 & if & x > 4 \end{cases}$

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

a)

b)

c)

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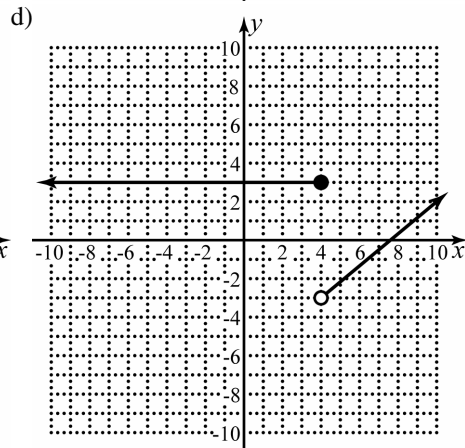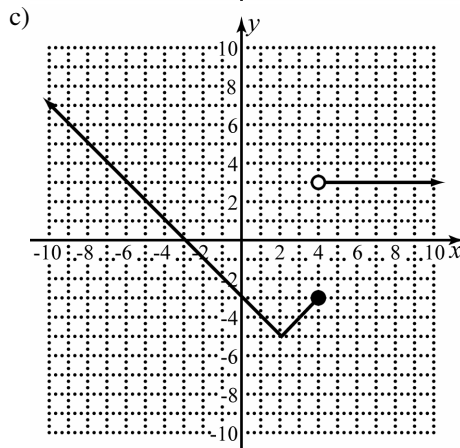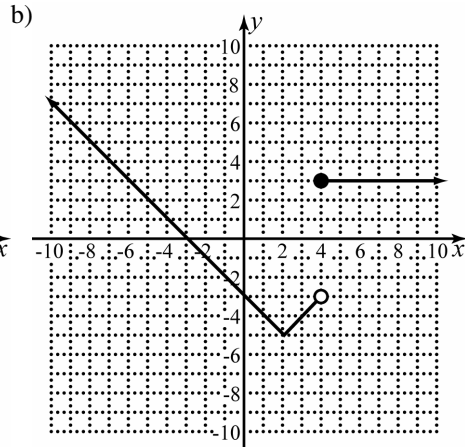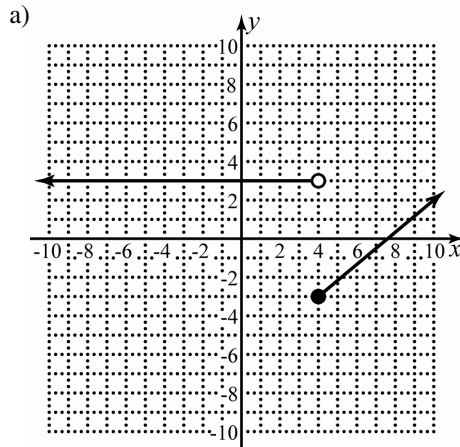
26)   Determine the value of $f(4)$.   26) _____

   a) -3 b)   1   c)   7   d)   3

27)   Determine the value of $f(-4)$.   27) _____

   a) -1 b) -3 c)   3   d)   1

28)   Determine the value of $f(6)$.   28) _____

   a)   1   b)   3   c) -3 d) -1

Ratti & McWaters, *College Algebra and Trigonometry and Precalculus*

29) Find $\frac{f(x+h)-f(x)}{h}$ for $f(x)=x^3-x$.   29) _____

   a) h^2-1 b) $h^2+3hx+3x^2-1$
   c) $h^2+3hx+3x^2+1$ d) $3x^2-1$

30) Given $f(x)$ and $g(x)$, find $(f\circ g)(x)$ and determine its domain.   30) _____

   $f(x)=7x^2+4, g(x)=\sqrt{8-x}$

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

31) Given $f(x)=\sqrt[3]{x-27}$, find $f^{-1}(x)$.   31) _____

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

A company that produced toy cars has a monthly a monthly cost of 2,300 dollars and a marginal cost of 4 dollars per toy car. The company makes 11 dollars per toy car in revenue. With this information, answer exercises 32–35.

32) Find the function, $C(x)$, that represents the total cost of producing x toy cars.   32) _____

   a) $C(x)=4x$ b) $C(x)=11x+2300$
   c) $C(x)=4x+2300$ d) $C(x)=2300x+4$

33) Find the function, $R(x)$, that represents the revenue from selling x toy cars.   33) _____

   a) $R(x)=11x-2300$ b) $R(x)=11x$
   c) $R(x)=4x$ d) $R(x)=7x$

34) Find the function, $P(x)$, that represents the profit from selling x toy cars.   34) _____

   a) $P(x)=11x-2300$ b) $P(x)=7x-2300$
   c) $P(x)=7x$ d) $P(x)=2300-7x$

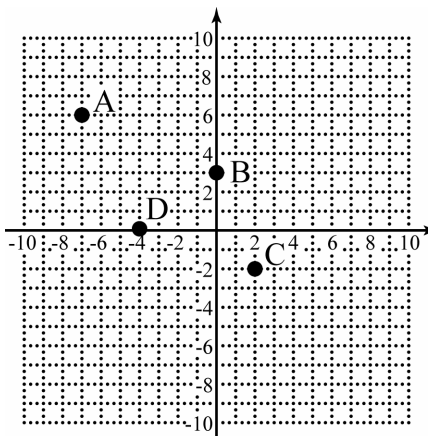35) What would the profit be from selling 1150 toy cars?   35) _____

   a) $8,050   b) $-$5,750   c) $10,350   d) $5,750

Ratti & McWaters, *College Algebra and Trigonometry and Precalculus*

In exercises 1–4, refer to the graph to the right.

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

   a) $(6,-7)$ b) $(-7,6)$

   c) $(-7,-6)$ d) $(-6,7)$

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

   a) $(3,0)$ b) $(-3,0)$

   c) $(0,3)$ d) $(0,-3)$

3)   What are the coordinates of point C?   3) _____

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

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

4)   What are the coordinates of point D?
                                                                                             4) _____
   a) $(-4,0)$ b) $(4,0)$

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

In exercises 5–6, use the points $(5,-4)$ and $(-7,10)$.

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) $(-1,3)$ b) $(6,-7)$ c) $(-7,6)$ d) $(1,-3)$

7)   Write the equation of the circle centered at $(-4,3)$ with a radius of 7.   7) _____

   a) $(x-4)^2 +(y+3)^2 =7$ b) $(x-4)^2 +(y+3)^2 =49$

   c) $(x+4)^2 +(y-3)^2 =7$ d) $(x+4)^2 +(y-3)^2 =49$

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

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

Ratti & McWaters, *College Algebra and Trigonometry and Precalculus*

In exercises 9–12, find the equation of the following lines. Write your answer in slope-intercept form.

9) Passing through $(-5,4)$ with slope -3.   9) _____

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

10) Passing through $(-3,-2)$ and $(2,5)$.   10) _____

   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) $y=\frac{5}{7}x-\frac{25}{7}$

11) Perpendicular to $-4x+3y=11$ passing through $(6,5)$.   11) _____

   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) $y=\frac{1}{4}x+\frac{7}{2}$

12) Find the equations of the vertical line passing through $(7,-6)$.   12) _____

   a) $x=-6$ b) $y=-6$ c) $x=7$ d) $y=7$

13) Find the equations of the vertical line passing through $(-1,-3)$.   13) _____

   a) $x=-1$ b) $y=-1$ c) $x=-3$ d) $y=-3$

14) Find the domain of $f(x)=\dfrac{x-5}{\sqrt{24-6x}}$. Write your answer using interval notation.   14) _____

   a) $(-\infty,4)$ b) $(4,\infty)$ c) $(-\infty,4]$ d) $[4,\infty)$

15) Determine which symmetries the graph of the $x^2y^2-x^4=y$ possesses.   15) _____

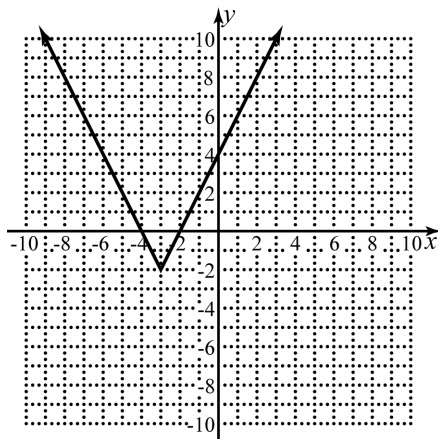   a) x-axis   b) y-axis   c) origin   d) none

16) Write the formula for the function graphed to   16) _____
    the right

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

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

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

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

17)   Which of the following is not a transformation of the basic function in   17) _____
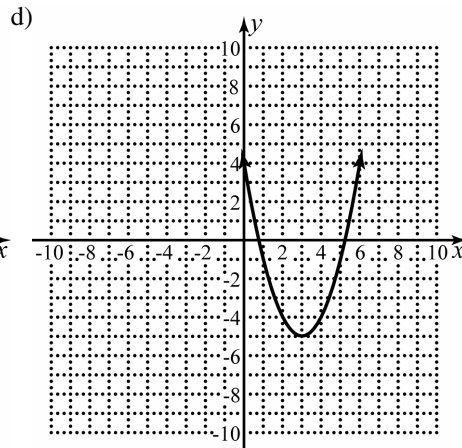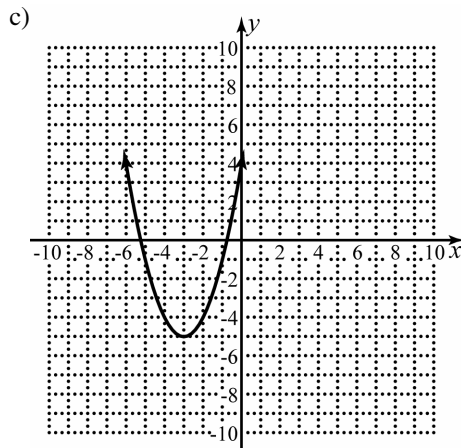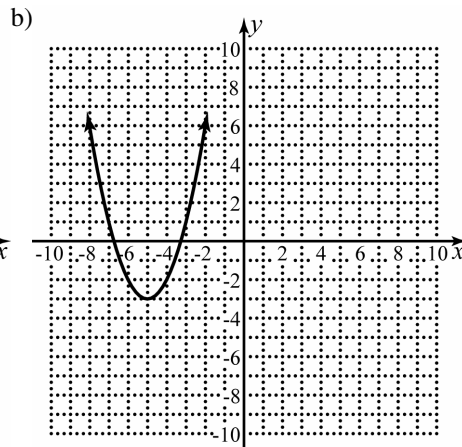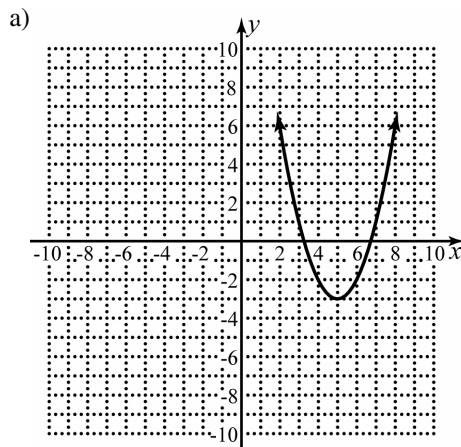 $g(x) = -3(x-2)^2 + 7$

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

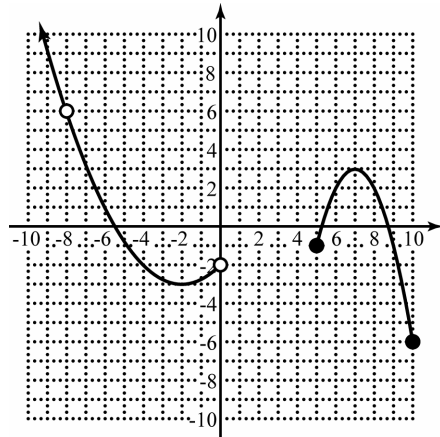18)   Graph $f(x) = \frac{1}{2}(x+3)^2 - 5$ 18) _____

a)

b)

c)

d)

In exercises 19–20, refer to the graph to the right.

19) _____

19)   Determine the domain of the function.

   a) $(-\infty,\infty)$
   b) $(-\infty,-8)\cup(-8,0)\cup[5,10]$
   c) $[-6,6)\cup(6,\infty)$
   d) $(-\infty,0)\cup[5,10]$

20) _____

20)   Determine the range of the function.

   a) $[-6,\infty)$
   b) $(-\infty,-8)\cup(-8,0)\cup[5,10]$
   c) $[-6,6)\cup(6,\infty)$
   d) $(-\infty,0)\cup[5,10]$

In exercises 21–23, refer to the graph to the right.

21) _____

21)   When is the graph to the right increasing?
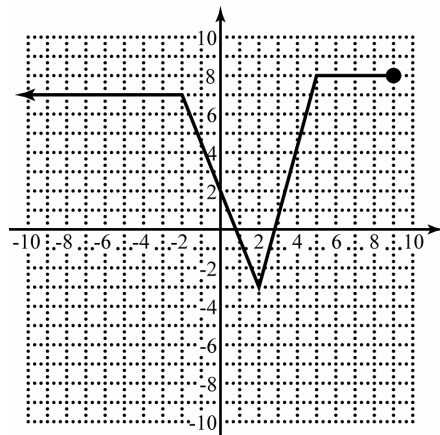
   a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$
   c) $(-2,2)$ d)   Never

22)   When is the graph to the right decreasing?

22) _____

   a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$
   c) $(-2,2)$ d)   Never

23)   When is the graph to the right constant?

23) _____

   a) $(-\infty,-2)\cup(5,9)$ b) $(2,5)$
   c) $(-2,2)$ d)   Never

24)   Find the coordinates of the intercepts of $y=\sqrt[3]{3x-27}$

24) _____

   a) $(3,0),(0,-9)$ b) $(-3,0),(0,9)$
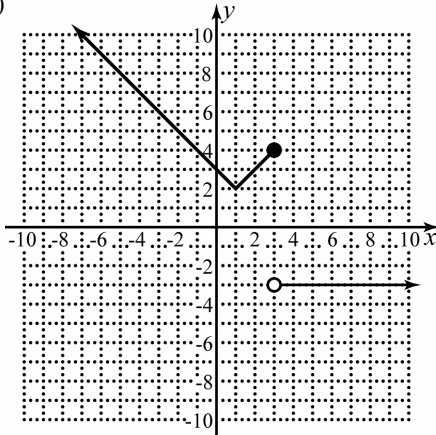   c) $(0,-3),(-9,0)$ d) $(0,-3),(9,0)$

In exercises 25–28, use $f(x) = \begin{cases} -3 & if \quad x \geq 3 \\ \left|\,|1-x|+2\right| & if \quad x < 3 \end{cases}$

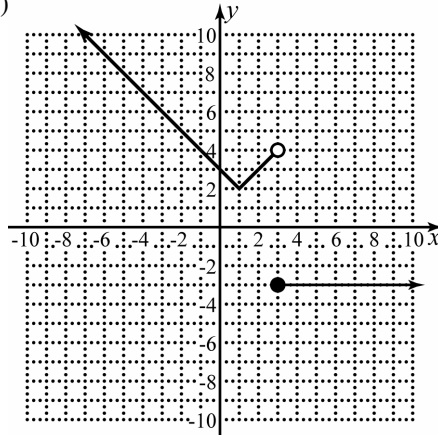25) Graph $f(x)$.　　　　　　　　　　　　　　　　　　　　　　　　　　25) _____

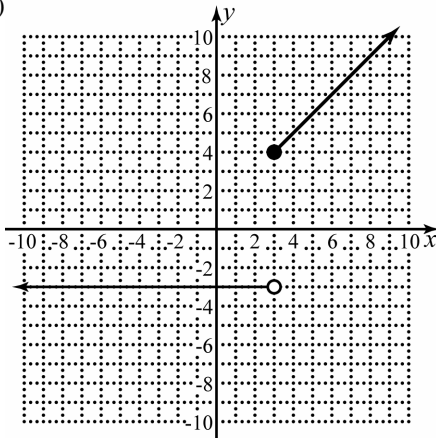a)

b)

c)

d)

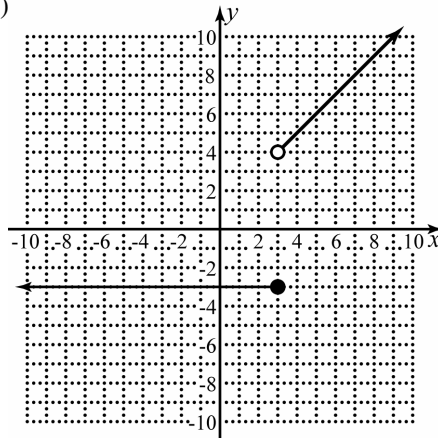26) Determine the value of $f(3)$.　　　　　　　　　　　　　　　　26) _____

　　a) -3　　　　　　b) 6　　　　　　c) 2　　　　　　d) 18

27) Determine the value of $f(-3)$.　　　　　　　　　　　　　　　27) _____

　　a) -3　　　　　　b) 6　　　　　　c) 4　　　　　　d) 0

28) Determine the value of $f(0)$.　　　　　　　　　　　　　　　　28) _____

　　a) 3　　　　　　　b) 0　　　　　　c) 5　　　　　　d) -3

29) Find $\dfrac{f(x+h)-f(x)}{h}$ for $f(x) = 2x^2 - 3x$.　　　　　　　29) _____

　　a) $2h+3$　　　　b) $4x-1$　　　　c) $2h+4x-3$　　d) $2h+4x+3$

30)   Given $f(x)$ and $g(x)$, find $(f \circ g)(x)$ and determine its domain.   30) _____

$$f(x) = \frac{x^2 - 3}{x^2 + 2}, g(x) = \sqrt{x + 3}$$

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) $\dfrac{x}{x + 5}$; $[-3, \infty)$

31)   Given $f(x) = \dfrac{4}{x - 5}$, find $f^{-1}(x)$.   31) _____

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

A company that produced toy cars has a monthly a monthly cost of 3,300 dollars and a marginal cost of 14 dollars per toy car. The company makes 32 dollars per toy car in revenue. With this information, answer exercises 32–35.

32)   Find the function, $C(x)$, that represents the total cost of producing x toy cars.   32) _____

a) $C(x) = 14x$ b) $C(x) = 32x + 3300$

c) $C(x) = 3300x + 14$ d) $C(x) = 14x + 3300$

33)   Find the function, $R(x)$, that represents the revenue from selling x toy cars.   33) _____

a) $R(x) = 32x - 3300$ b) $R(x) = 18x$

c) $R(x) = 32x$ d) $R(x) = 14x$

34)   Find the function, $P(x)$, that represents the profit from selling x toy cars.   34) _____

a) $P(x) = 32x - 3300$ b) $P(x) = 3300 - 18x$

c) $P(x) = 18x - 3300$ d) $P(x) = 18x$

35)   What would the profit be from selling 750 toy cars?   35) _____

a) $10,200   b) $20,700   c) $13,500   d) $-$10,200