Graphing Functions
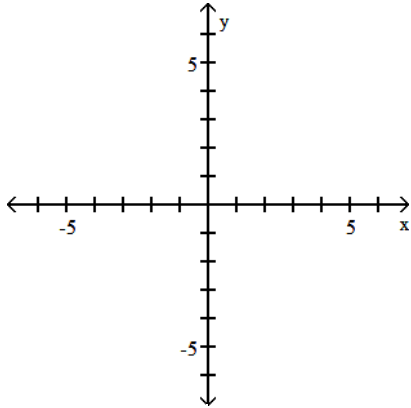
Name_____

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

Graph the function.
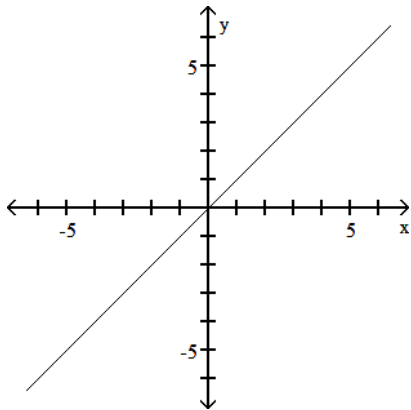
1) f(x) = x

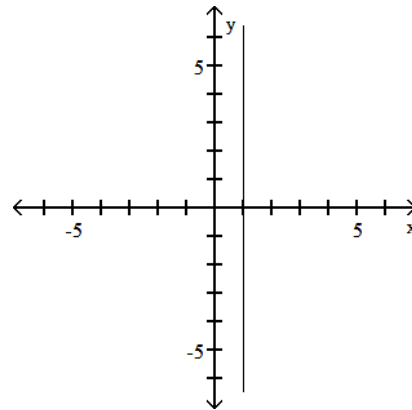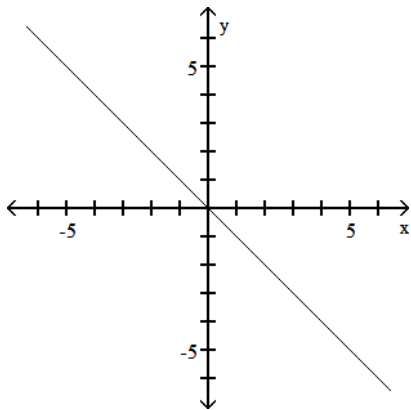1) _____

A)

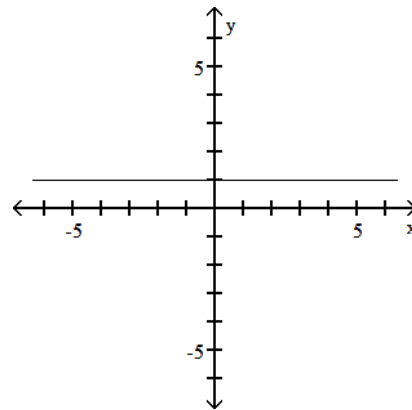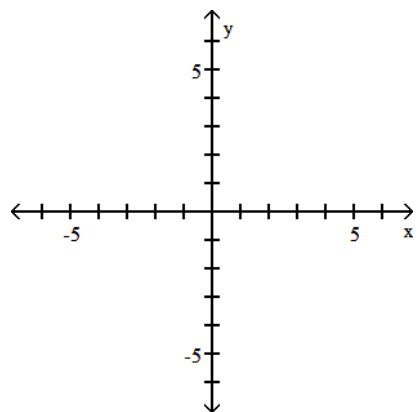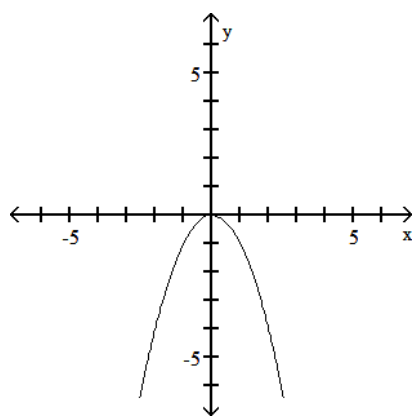B)

C)

D)

2) $f(x) = x^2$

2) _____

A)

B)

C)

D)

3) $f(x) = \sqrt{x}$

3) _____

A)

B)

C)

D)

3

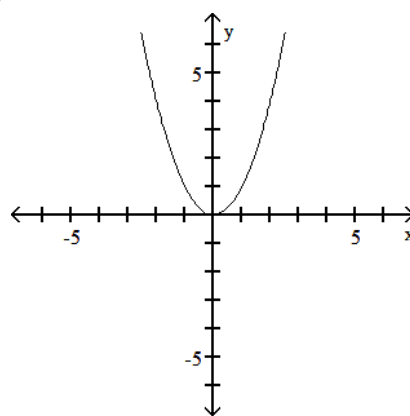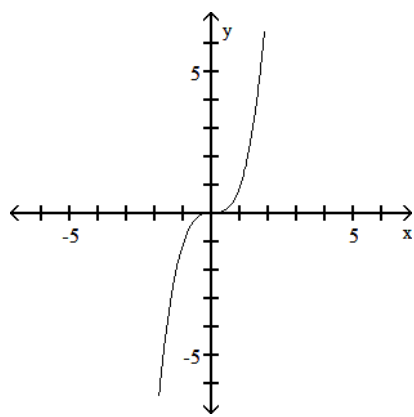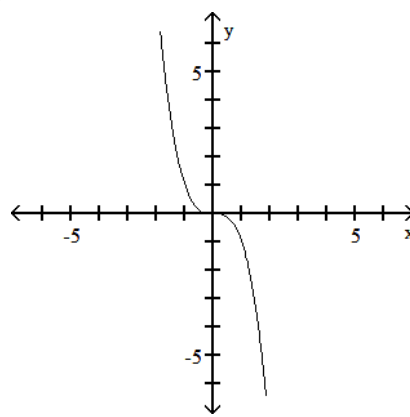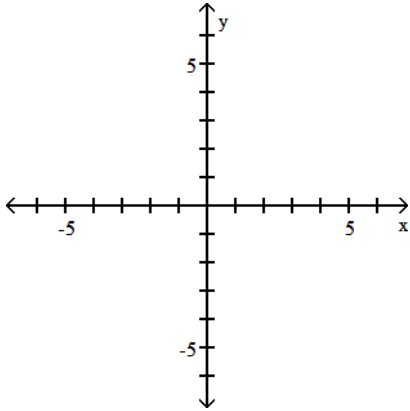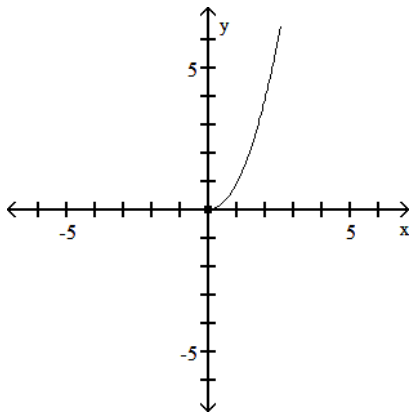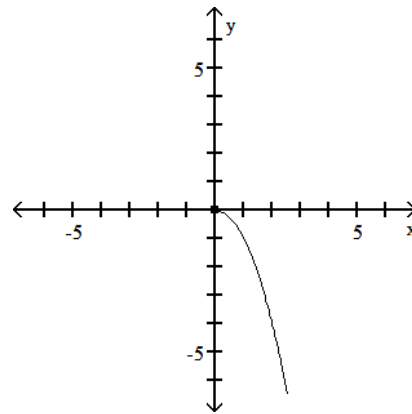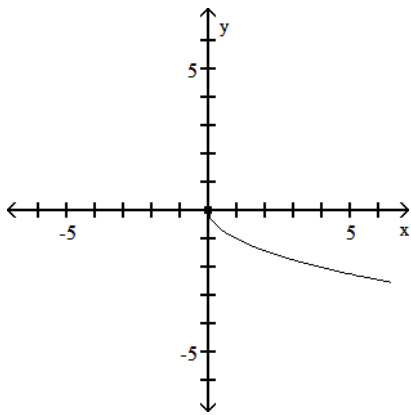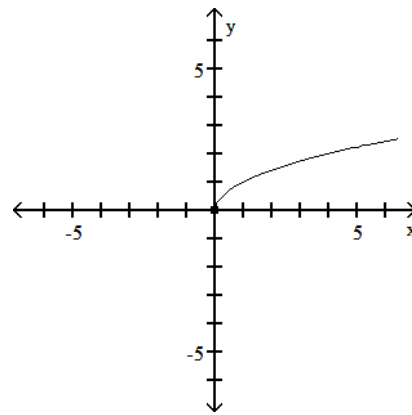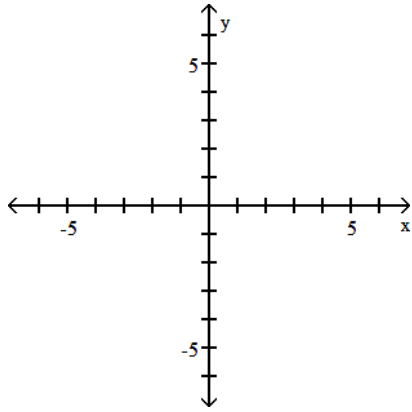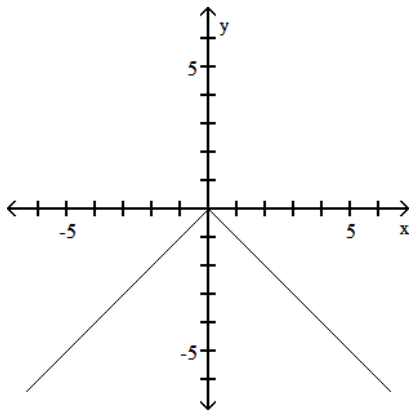4) f(x) = |x| 4) _____
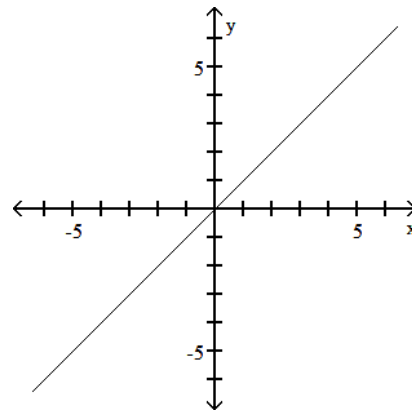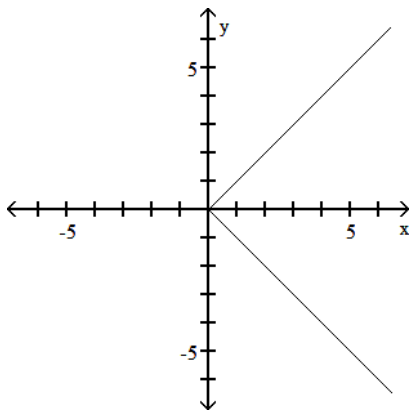

A)
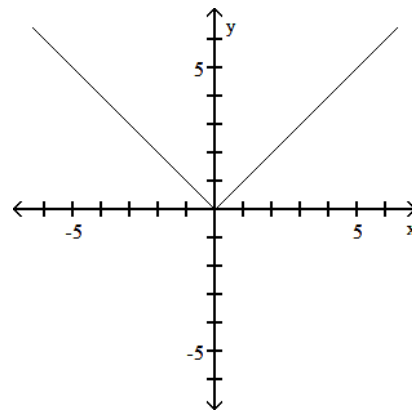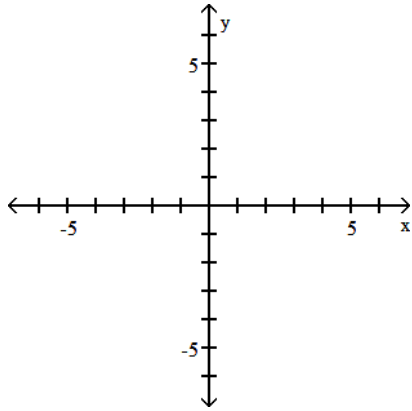

B)

C)

D)
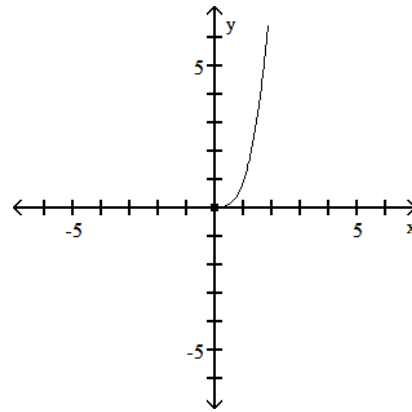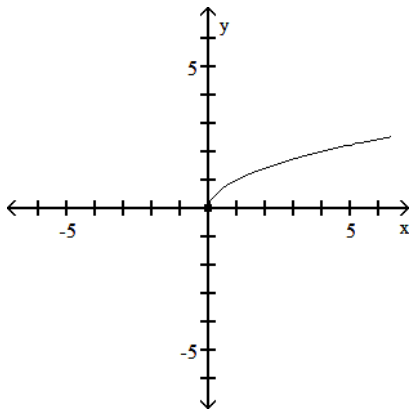
5) $f(x) = \sqrt[3]{x}$

5) _____

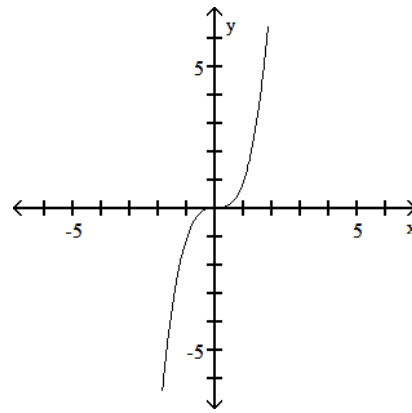A)
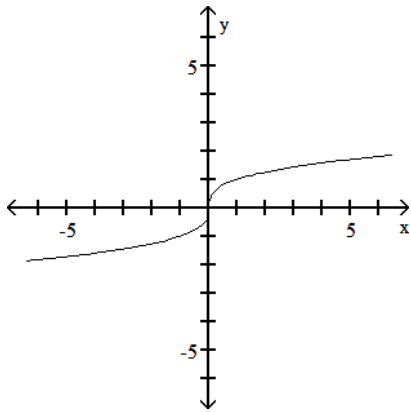
B)

C)

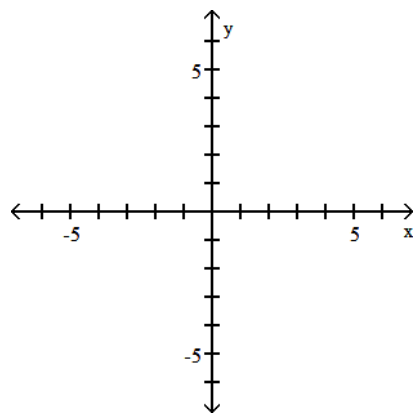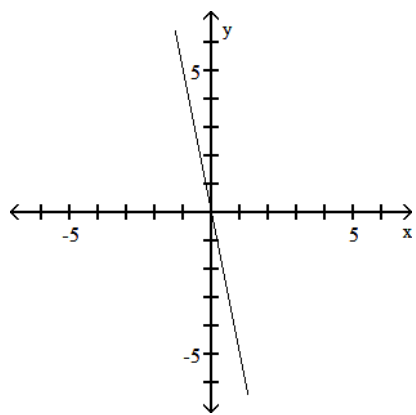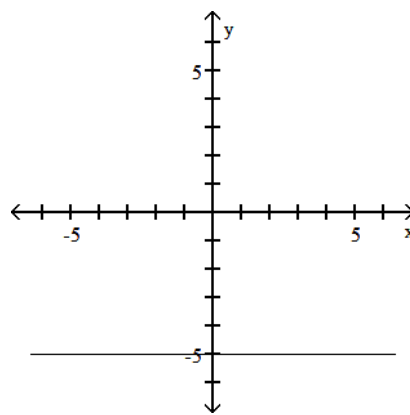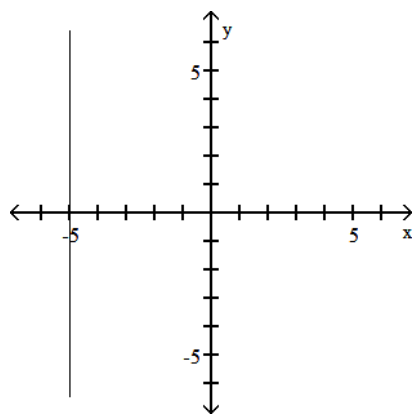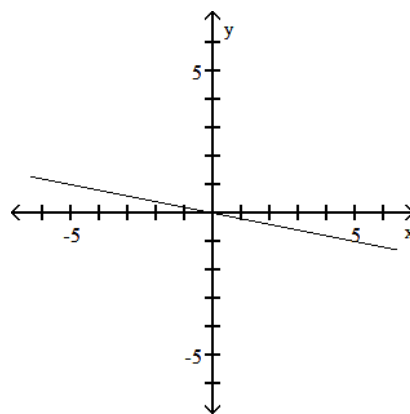D)

6) f(x) = -5

6) _____

A)

B)

C)
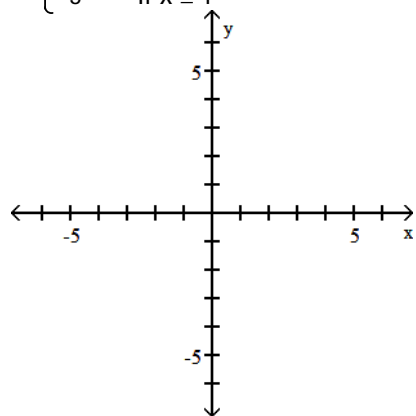

D)
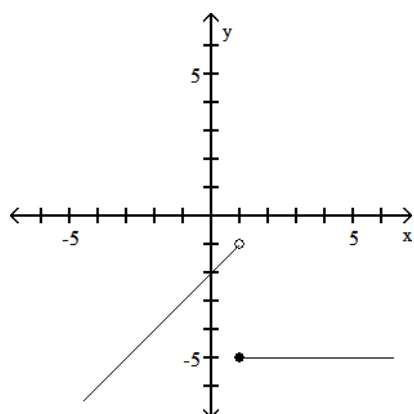
7)

$$f(x) = \begin{cases} x - 2 & \text{if } x < 1 \\ -5 & \text{if } x \geq 1 \end{cases}$$

A)

B)
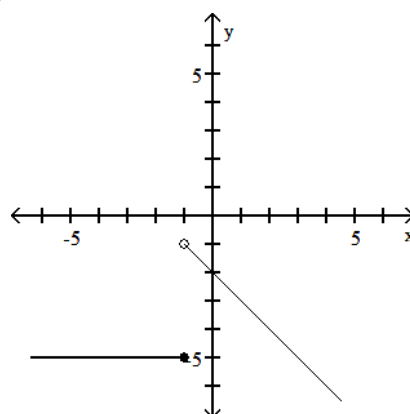
C)
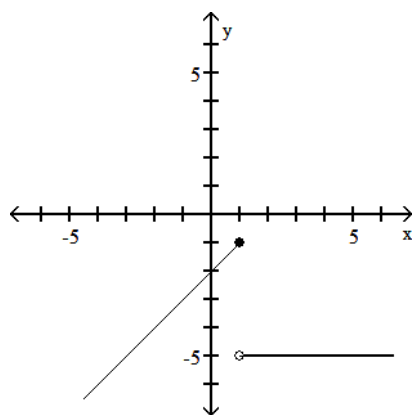
D)
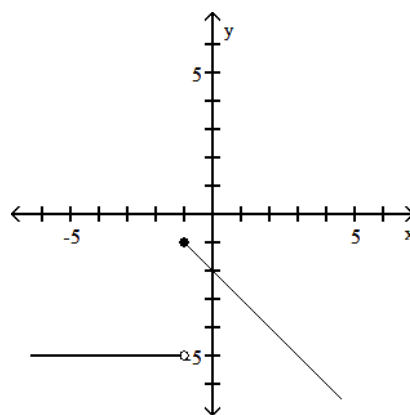
8)

$$f(x) = \begin{cases} -x + 3 & \text{if } x < 2 \\ 2x - 3 & \text{if } x \geq 2 \end{cases}$$
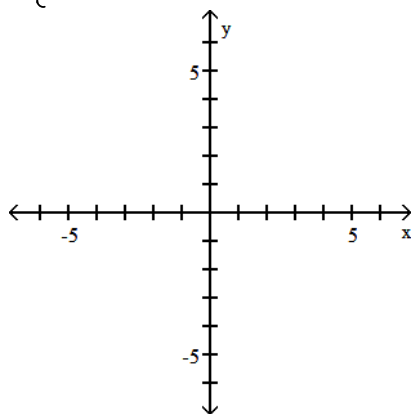
A)
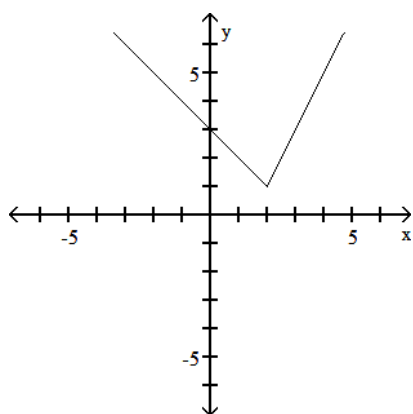
B)
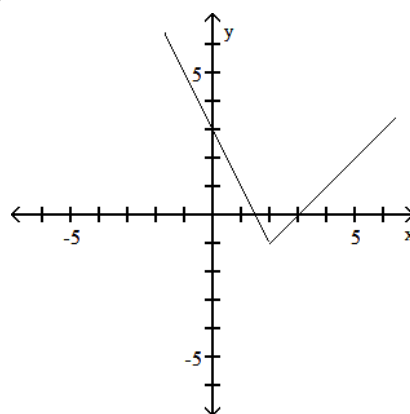
C)
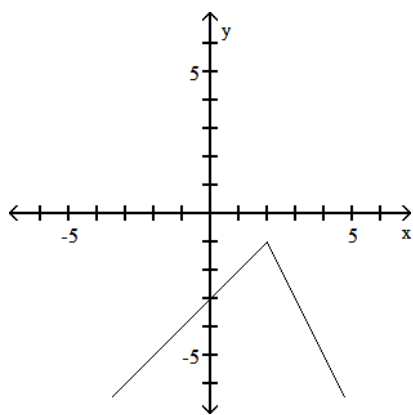
D)
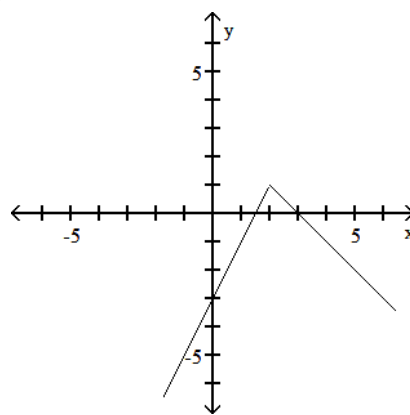
9)

$$f(x) = \begin{cases} -x + 2 & x < 0 \\ \sqrt{x} + 3 & x \geq 0 \end{cases}$$
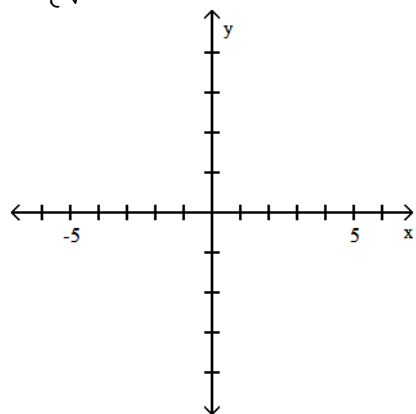
A)
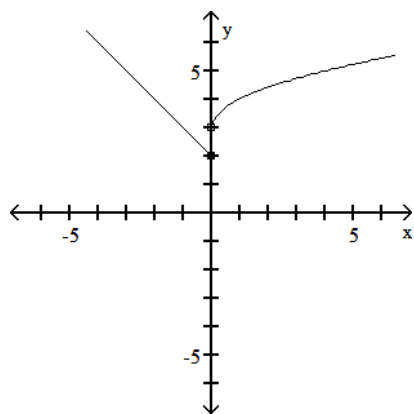
B)
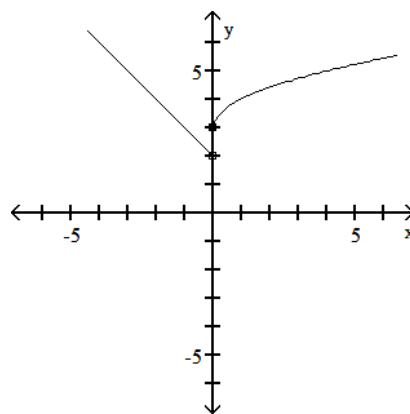
C)
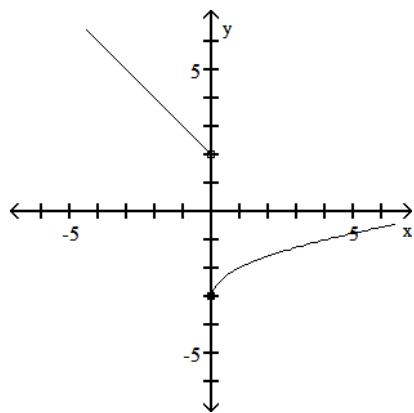
D)
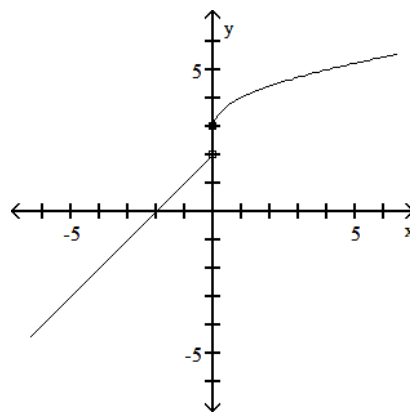
10)

$$f(x) = \begin{cases} 1 & \text{if } 0 \le x < 5 \\ |x| & \text{if } 5 \le x < 9 \\ \sqrt{x} & \text{if } 9 \le x \le 11 \end{cases}$$
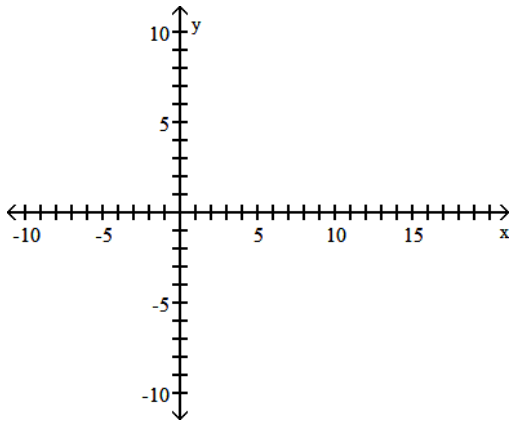
A)
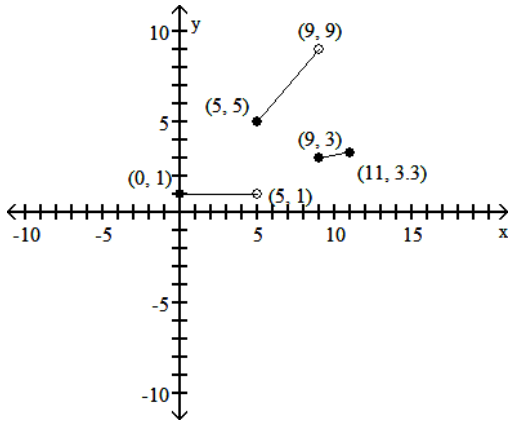
B)
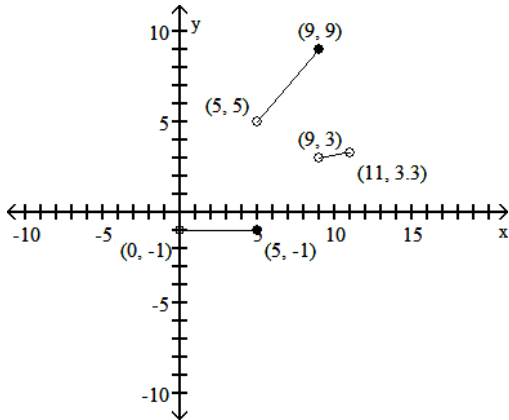
C)
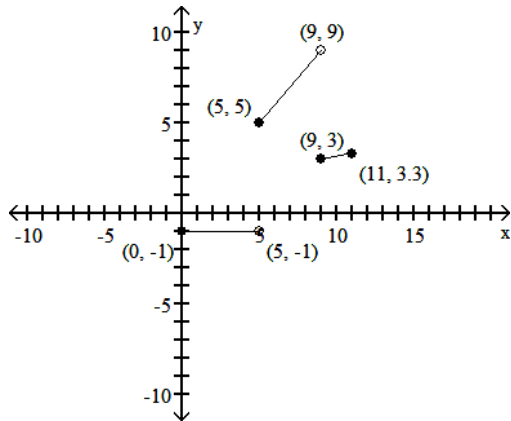
D)
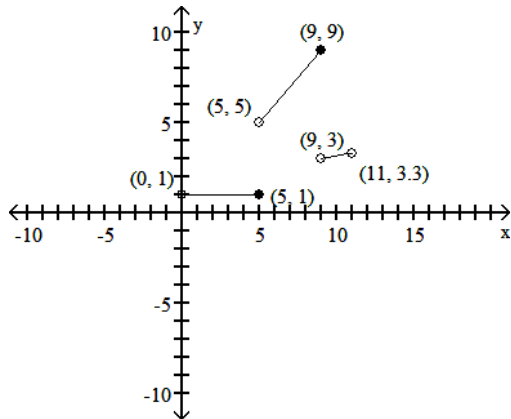
Write the equation of a sine function that has the given characteristics.

11) The graph of $y = x^2$, shifted 2 units downward

11) _____

A) $y = 2x^2$ B) $y = x^2 + 2$ C) $y = \dfrac{x^2}{2}$ D) $y = x^2 - 2$

12) The graph of $y = |x|$, shifted 6 units to the right

12) _____

A) $y = |x| + 6$ B) $y = |x - 6|$ C) $y = |x| - 6$ D) $y = |x + 6|$

Suppose the point (2, 4) is on the graph of $y = f(x)$. Find a point on the graph of the given function.

13) $y = f(x + 2)$

13) _____

A) (2, 6)   B) (4, 4)   C) (2, 2)   D) (0, 4)

Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

14) $f(x) = x^2 - 2$

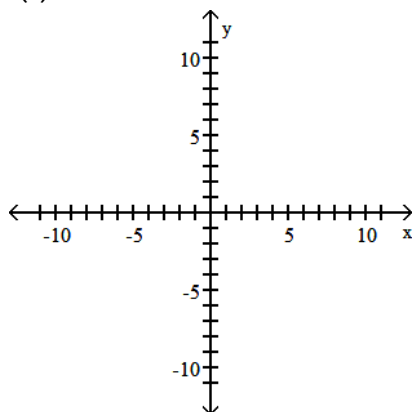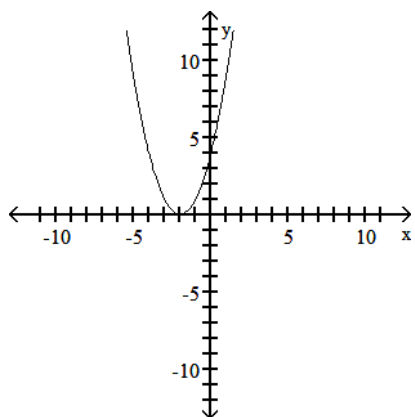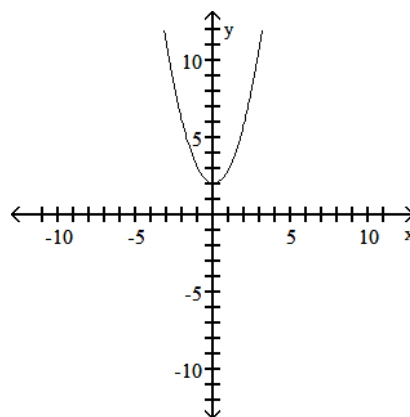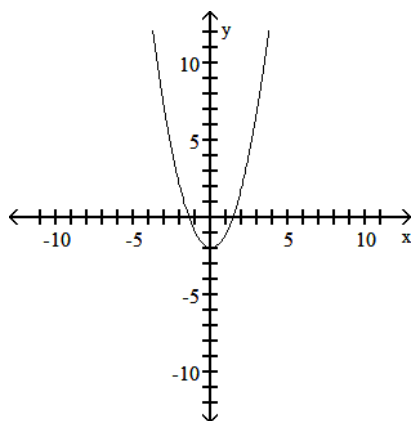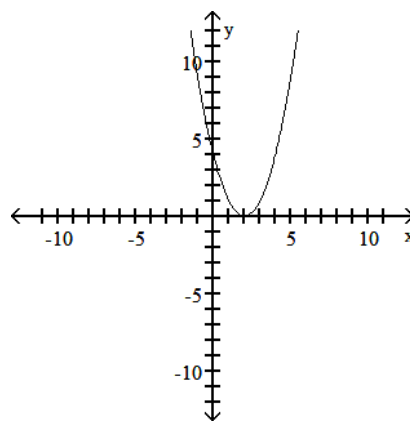14) _____

A)

B)
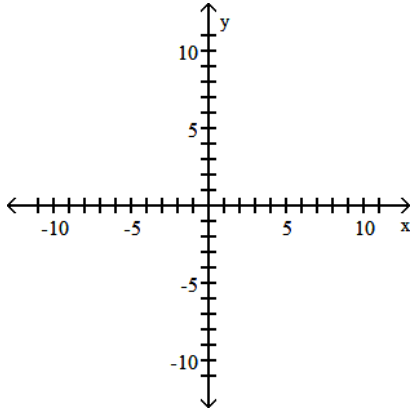

C)

D)
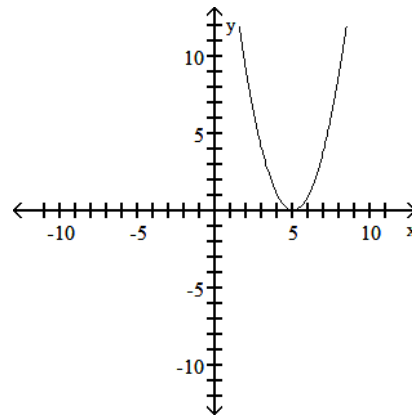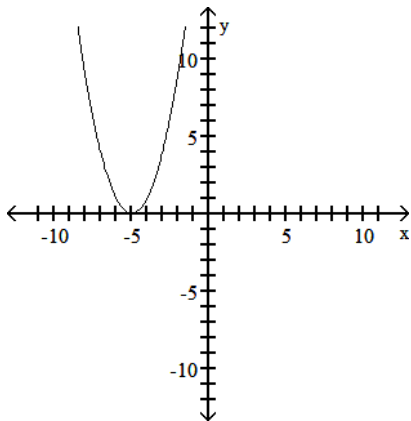
15) $f(x) = (x + 5)^2$

15) _____

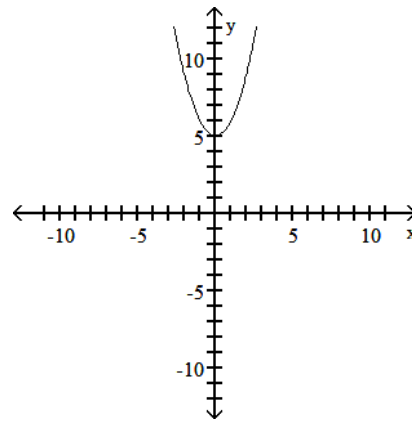A)
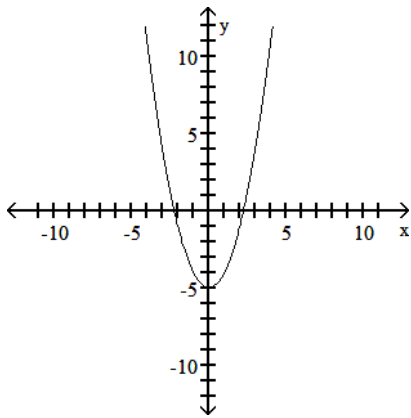
B)

C)

D)

16) $f(x) = (x + 3)^3 - 6$
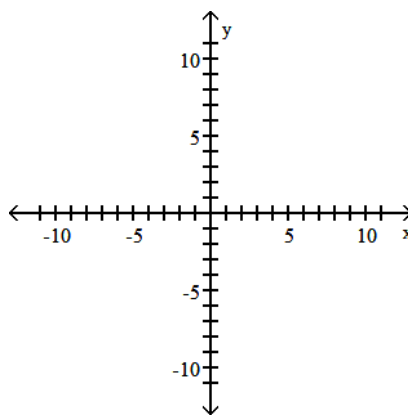

A)

B)

C)

D)

16) _____

17) $f(x) = \sqrt{x + 1} + 4$

A)

B)

C)

D)

18) $f(x) = \dfrac{1}{6}x^2$

A)

B)

C)

D)

19) $f(x) = \dfrac{1}{6}x^3$

A)

B)

C)

D)

20) $f(x) = \frac{1}{3}\sqrt{x}$

20) _____

A)

B)

C)

D)

18
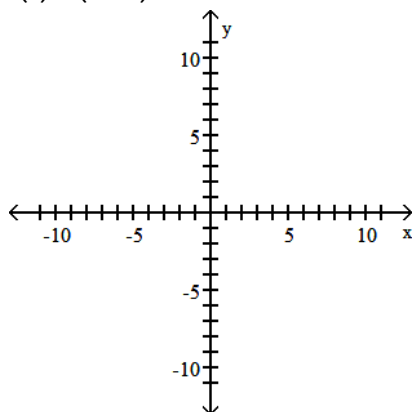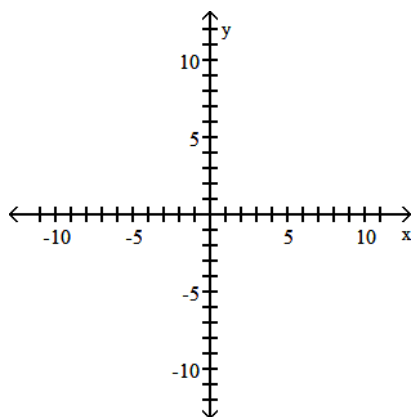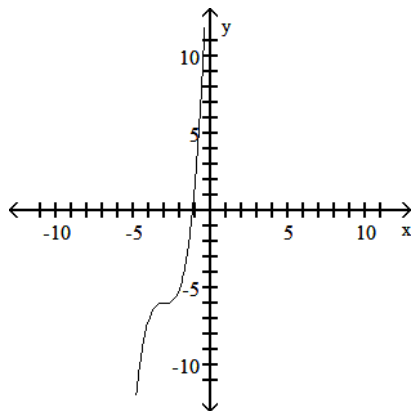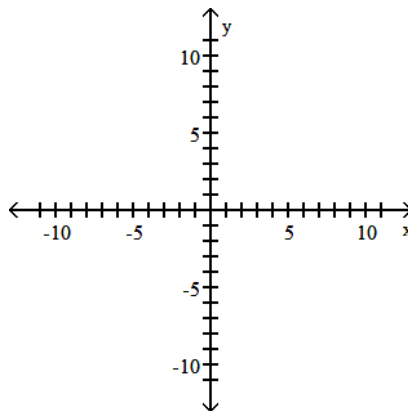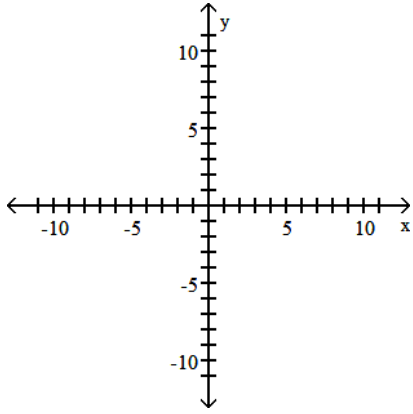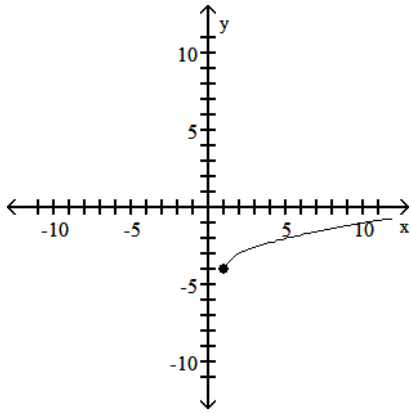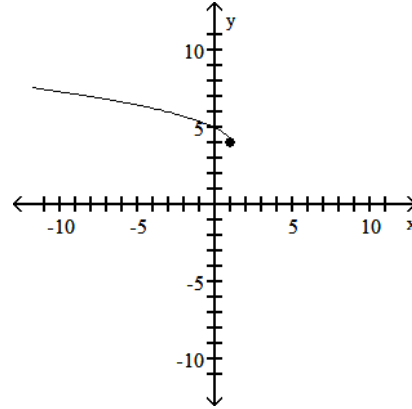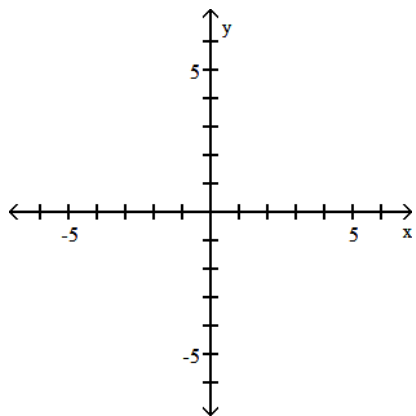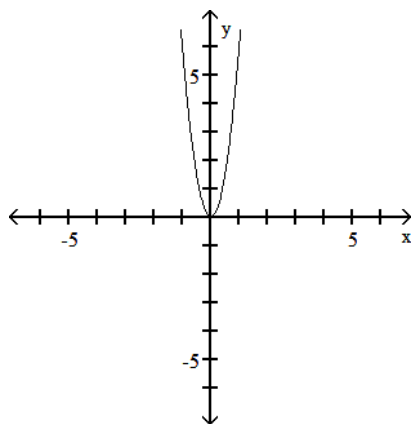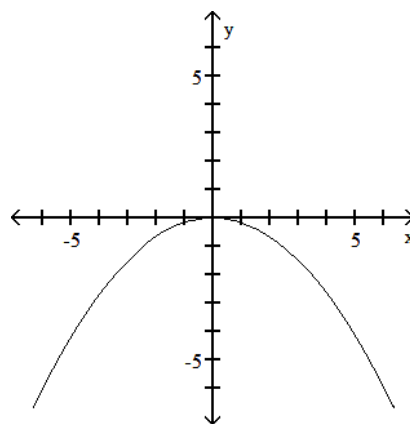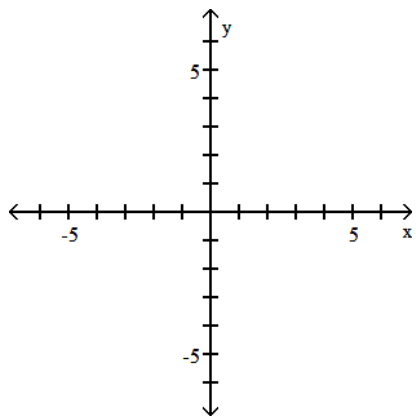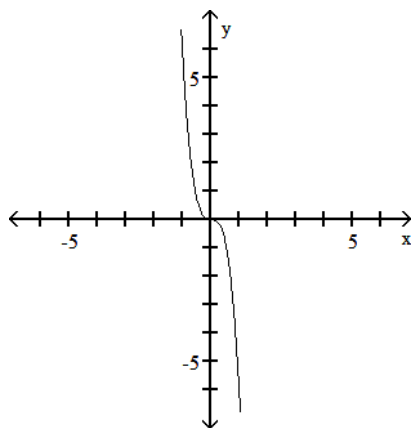
21) $f(x) = -x^2$

21) _____

A)

B)

C)

D)
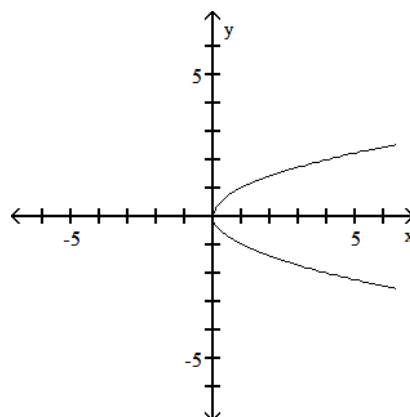
22) $f(x) = (-x)^3$
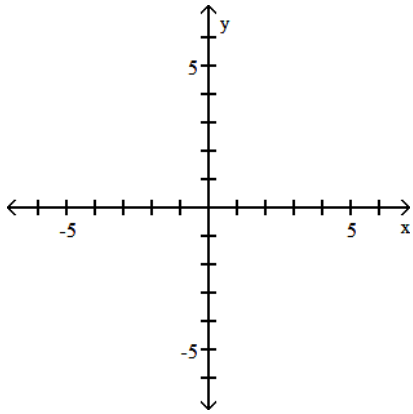
A)
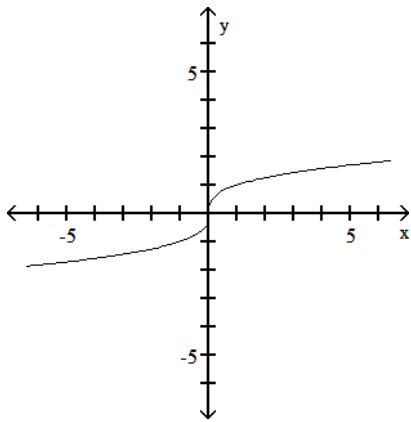
B)
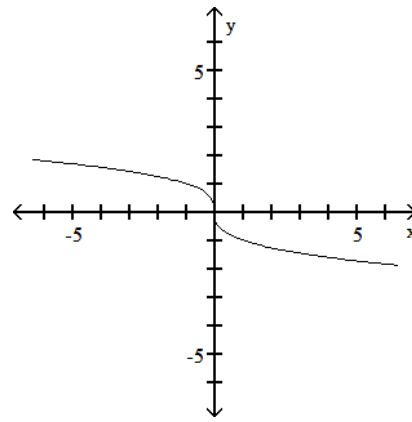
C)
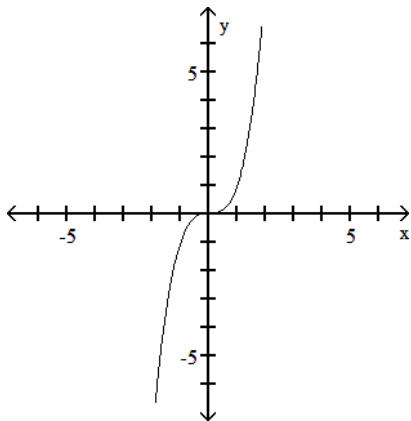
D)
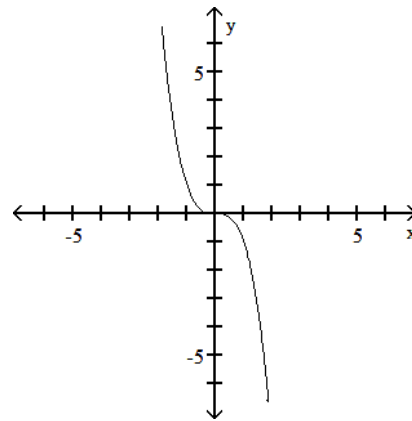
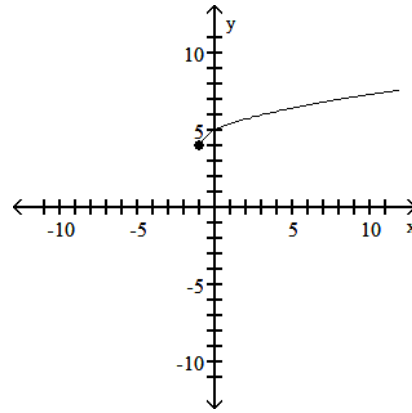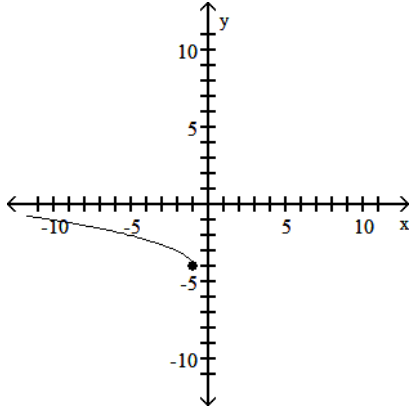23) $f(x) = \sqrt{-x}$

23) _____
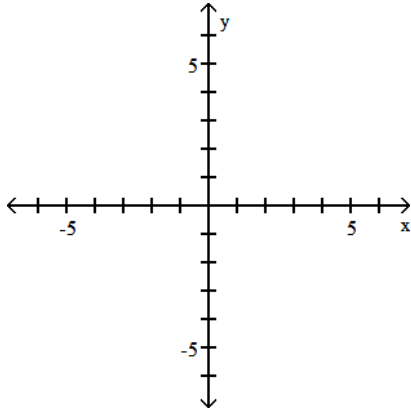
A)
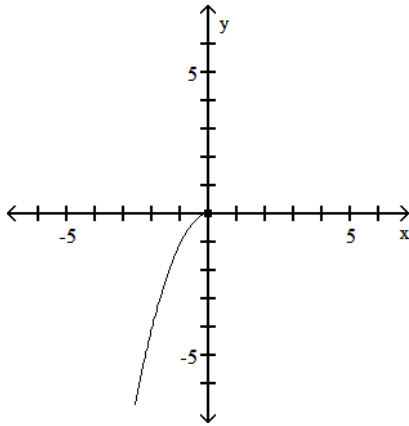
B)
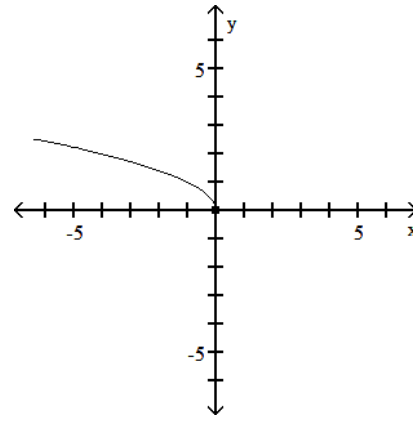
C)
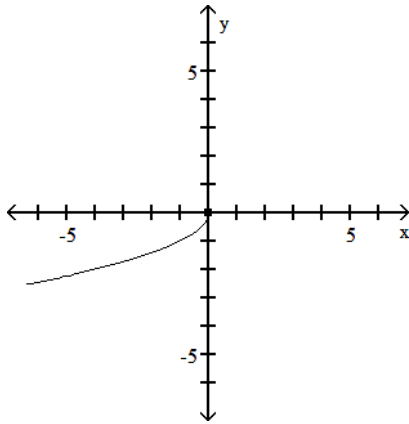
D)

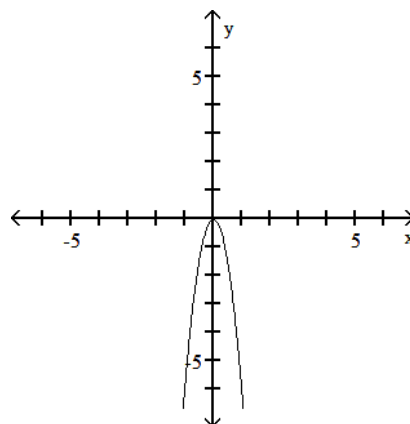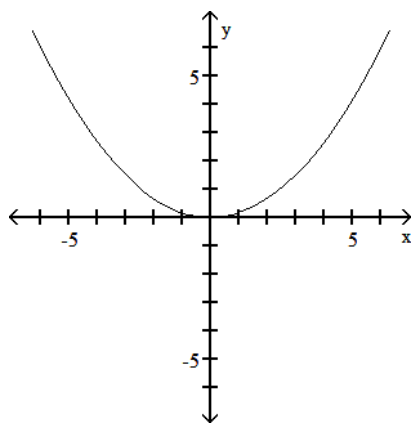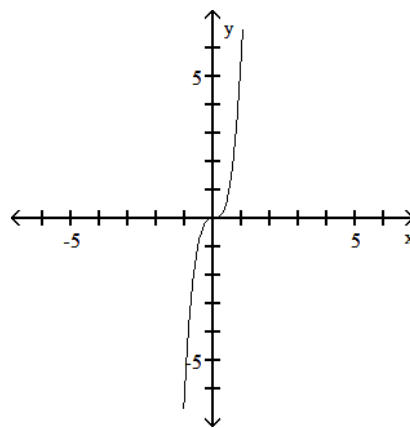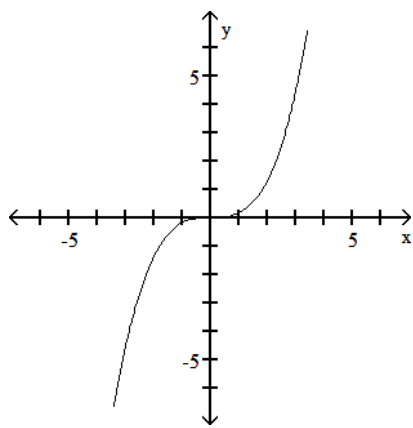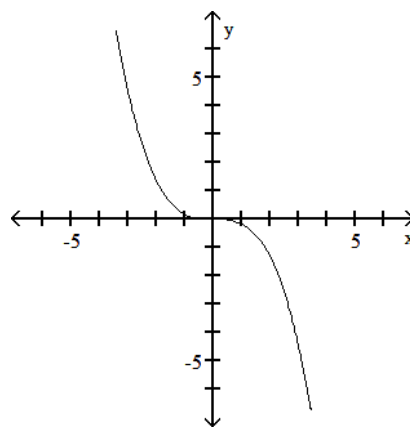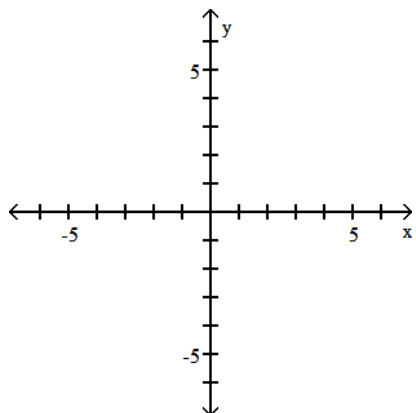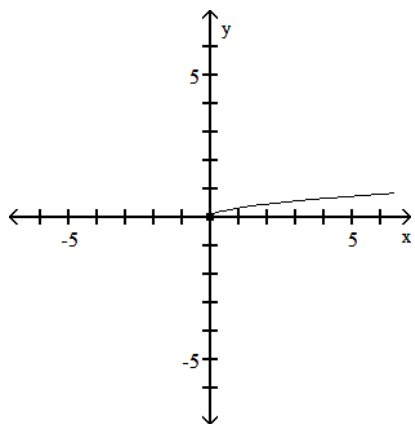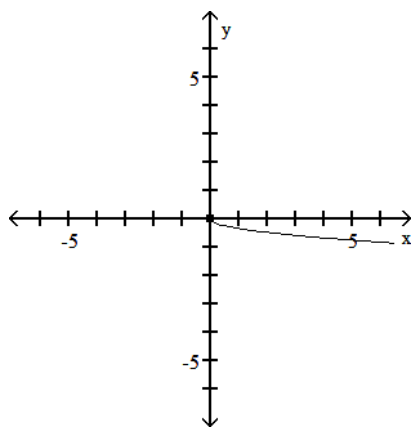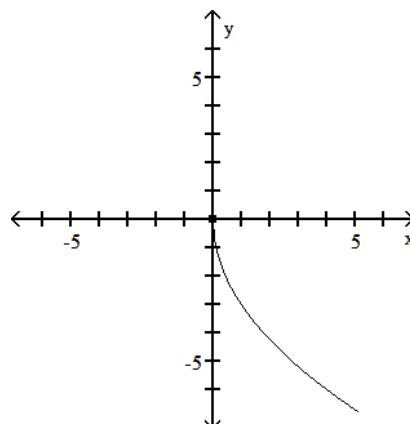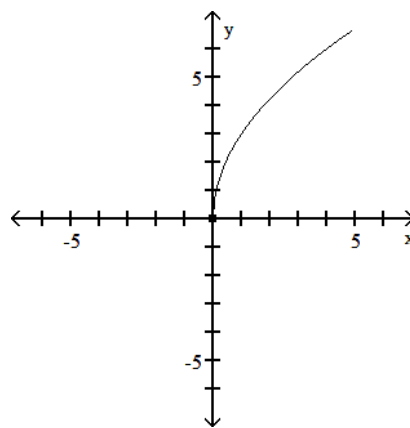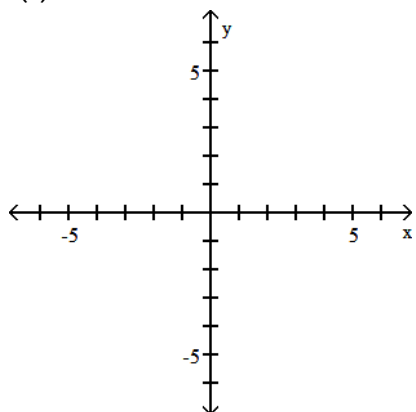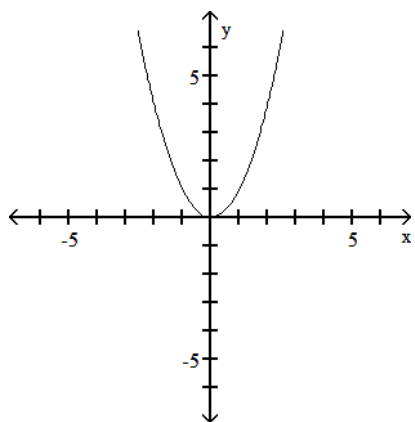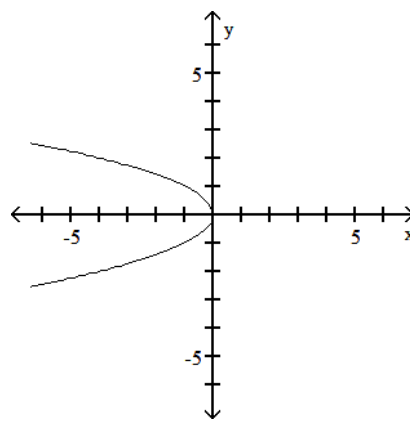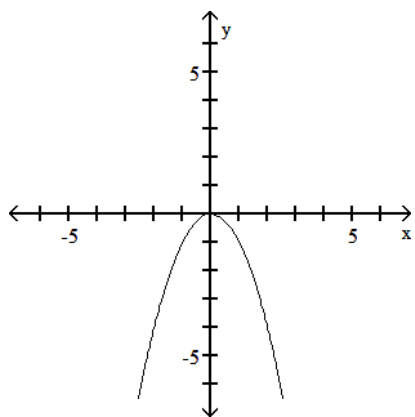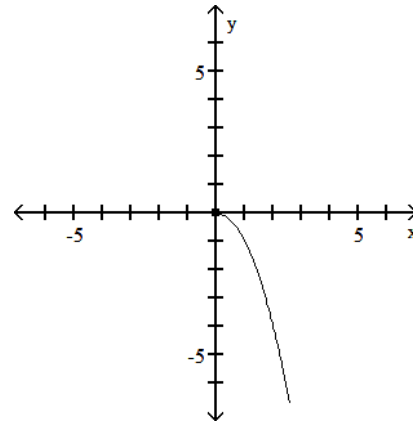Find the vertex and axis of symmetry of the graph of the function.

24) $f(x) = x^2 + 10x$

24) _____

    A) $(5, -25)$; $x = 5$
    C) $(-25, 5)$; $x = -25$
               B) $(-5, -25)$; $x = -5$
               D) $(25, -5)$; $x = 25$

25) $f(x) = x^2 - 4x$

25) _____

    A) $(4, -2)$; $x = 4$ B) $(-2, 4)$; $x = -2$ C) $(-4, 2)$; $x = -4$ D) $(2, -4)$; $x = 2$

26) $f(x) = x^2 + 4x - 5$

26) _____

    A) $(-2, -9)$; $x = -2$ B) $(-2, 9)$; $x = -2$ C) $(2, -9)$; $x = 2$ D) $(2, 9)$; $x = 2$

Solve the problem.

27) The price p and the quantity x sold of a certain product obey the demand equation

$$p = -\frac{1}{7}x + 200, \quad 0 \le x \le 1400.$$

What quantity x maximizes revenue? What is the maximum revenue?
   A) 1050; $52,500   B) 1400; $70,000   C) 350; $52,500   D) 700; $70,000

27) _____

28) The price p (in dollars) and the quantity x sold of a certain product obey the demand equation
   x = -5p + 100, 0 ≤ p ≤ 20.
   What quantity x maximizes revenue? What is the maximum revenue?
   A) 50; $500   B) 75; $375   C) 100; $500   D) 25; $375

28) _____

Graph the function.

29) $f(x) = \dfrac{3x}{(x - 5)(x - 1)}$
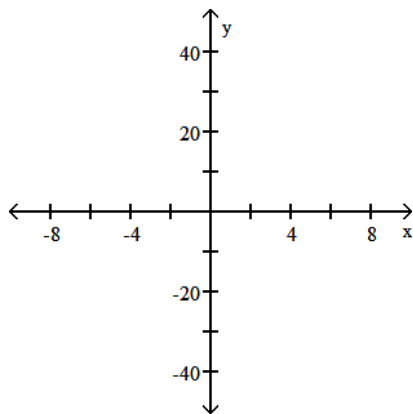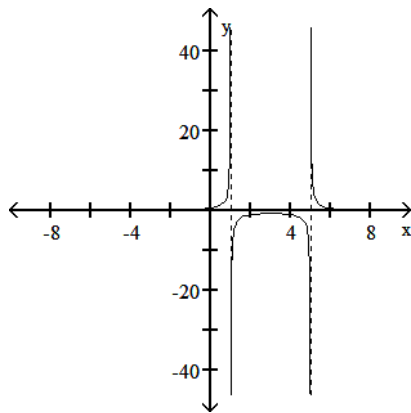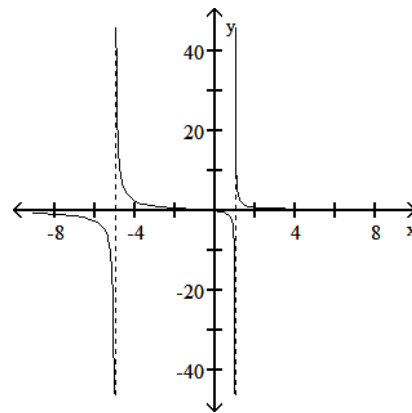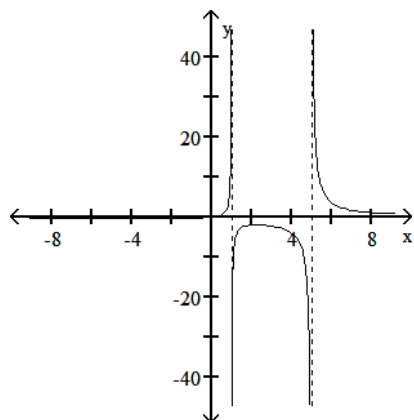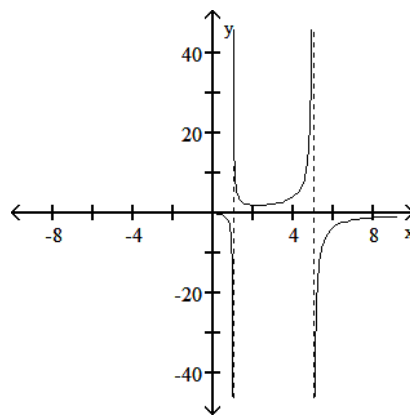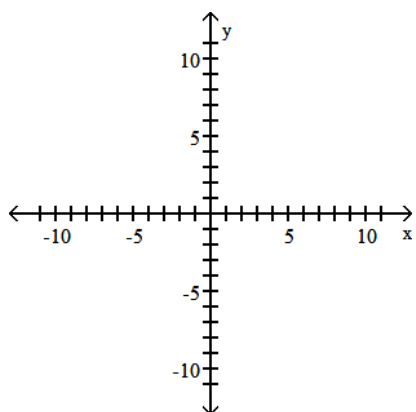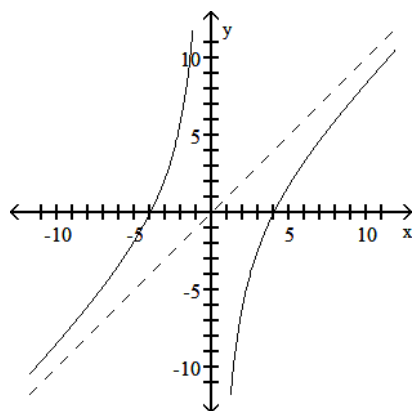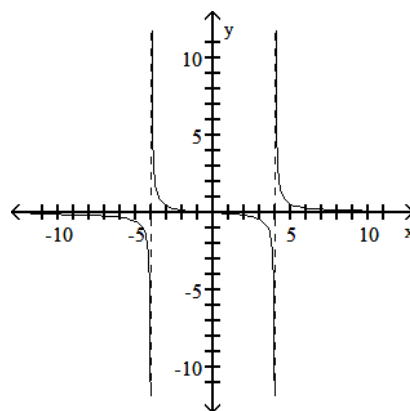
29) _____

A)

B)

22

C)

D)

30) $f(x) = x - \dfrac{16}{x}$
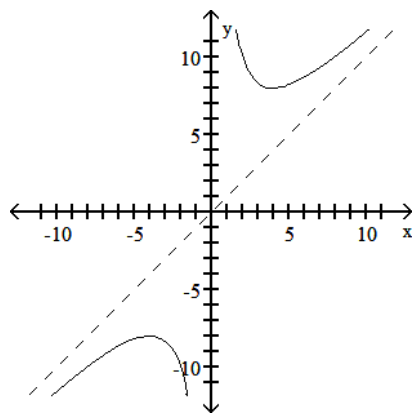

30) _____

A)

B)

23

C)

D)

24