

Use Scantron 882E to transfer the answers. Be sure you keep your scantron CLEAN and FLAT before its submission.

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

Determine the slope and y-intercept of the function.

1) $h(x) = -11x - 12$

A) $m = -11; b = -12$

C) $m = 11; b = 12$

B) $m = -11; b = 12$

D) $m = 11; b = -12$

1) _____

2) $G(x) = -3x$

A) $m = 0; b = -3$

B) $m = 3; b = 0$

C) $m = -\frac{1}{3}; b = 0$

D) $m = -3; b = 0$

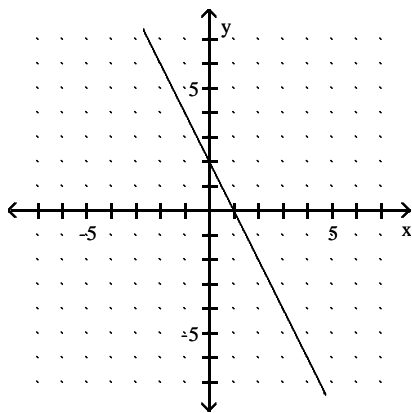
2) _____

Use the slope and y-intercept to graph the linear function.

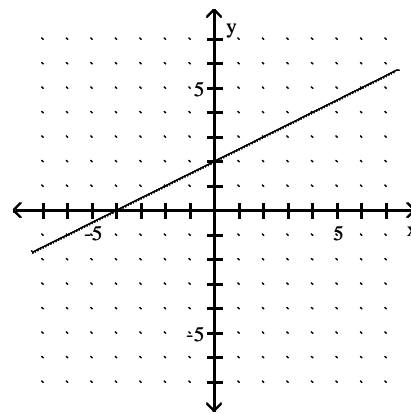
3) $h(x) = -\frac{1}{2}x + 2$

3) _____

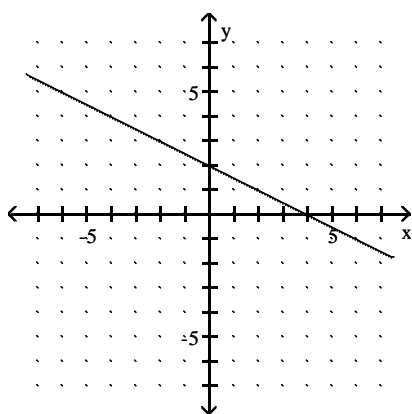
A)



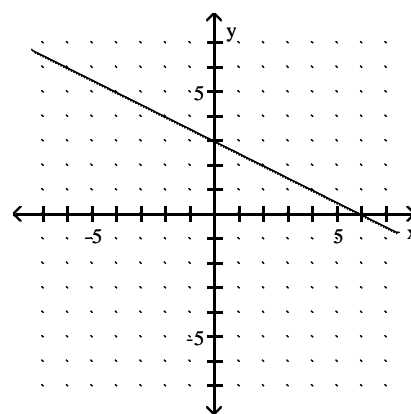
B)



C)



D)



Determine the average rate of change for the function.

4) $f(x) = 7x - 5$

A) -7

B) 7

C) 5

D) -5

4) _____

5) $p(x) = -x + 6$

A) 6

B) -6

C) 1

D) -1

5) _____

Determine whether the given function is linear or nonlinear.

6)

x	y = f(x)
5	15
9	27
13	39
17	51

A) nonlinear

B) linear

6) _____

Solve the problem.

7) Suppose that $f(x) = -x - 7$ and $g(x) = x - 12$.

(a) Solve $f(x) = 0$.

(b) Solve $g(x) = 0$.

(c) Solve $f(x) = g(x)$.

A) (a) $x = -7$; (b) $x = 12$; (c) $x = 2.5$

C) (a) $x = -7$; (b) $x = 12$; (c) $x = -9.5$

B) (a) $x = 7$; (b) $x = 12$; (c) $x = 2.5$

D) (a) $x = -7$; (b) $x = -12$; (c) $x = 2.5$

7) _____

8) Suppose that $f(x) = -x - 7$ and $g(x) = x - 15$.

(a) Solve $f(x) > 0$.

(b) Solve $g(x) > 0$.

(c) Solve $f(x) \leq g(x)$.

A) (a) $x > 7$; (b) $x > 15$; (c) $x > 4$

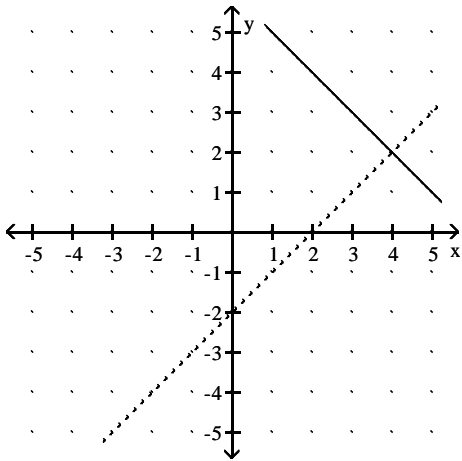
C) (a) $x < -7$; (b) $x < 15$; (c) $x \geq -11$

B) (a) $x < -7$; (b) $x < -15$; (c) $x \leq 4$

D) (a) $x < -7$; (b) $x > 15$; (c) $x \geq 4$

8) _____

9) Let $f(x)$ be the function represented by the dashed line and $g(x)$ be the function represented by the solid line. Solve the equation $f(x) = g(x)$.



A) $x = 2$

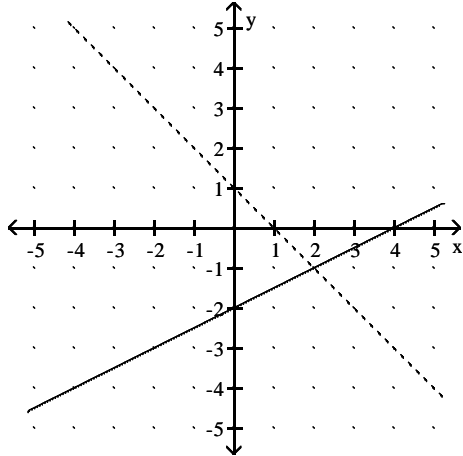
B) $x = -4$

C) $x = -2$

D) $x = 4$

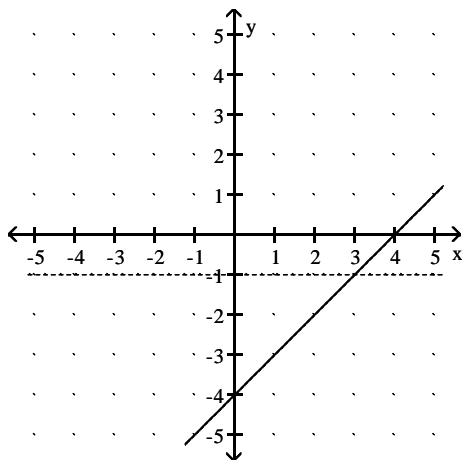
9) _____

- 10) Let $f(x)$ be the function represented by the dashed line and $g(x)$ be the function represented by the solid line. Solve the equation $f(x) < g(x)$. 10) _____



- A) $x > 2$ B) $x < -1$ C) $x > -1$ D) $x < 2$

- 11) Let $f(x)$ be the function represented by the dashed line and $g(x)$ be the function represented by the solid line. Solve the equation $f(x) \geq g(x)$. 11) _____



- A) $x \leq 3$ B) $x \geq 3$ C) $x < -1$ D) $x \geq -1$

- 12) A truck rental company rents a moving truck one day by charging \$39 plus \$0.07 per mile. Write a linear equation that relates the cost C , in dollars, of renting the truck to the number x of miles driven. What is the cost of renting the truck if the truck is driven 230 miles? 12) _____

- A) $C(x) = 0.07x - 39$; $-\$22.90$ B) $C(x) = 39x + 0.07$; $\$8970.07$
 C) $C(x) = 0.07x + 39$; $\$40.61$ D) $C(x) = 0.07x + 39$; $\$55.10$

- 13) Linda needs to have her car towed. Little Town Auto charges a flat fee of \$80 plus \$2 per mile towed. Write a function expressing Linda's towing cost, c , in terms of miles towed, x . Find the cost of having a car towed 14 miles. 13) _____

- A) $c(x) = 2x + 80$; $\$98$ B) $c(x) = 2x$; $\$28$
 C) $c(x) = 2x + 80$; $\$108$ D) $c(x) = 2x$; $\$82$

14) The cost for labor associated with fixing a washing machine is computed as follows: There is a fixed charge of \$25 for the repairman to come to the house, to which a charge of \$29 per hour is added. Find an equation that can be used to determine the labor cost, $C(x)$, of a repair that takes x hours. 14) _____

- A) $C(x) = 25 - 29x$ B) $C(x) = (25 + 29)x$
C) $C(x) = 25 + 29x$ D) $C(x) = 29 + 25x$

15) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.45 as soon as you get in the taxi, to which a charge of \$1.60 per mile is added. Find an equation that can be used to determine the cost, $C(x)$, of an x -mile taxi ride. 15) _____

- A) $C(x) = 4.05x$ B) $C(x) = 2.45 + 1.60x$
C) $C(x) = 2.55x$ D) $C(x) = 1.60 + 2.45x$

16) Marty's Tee Shirt & Jacket Company is to produce a new line of jackets with a embroidery of a Great Pyrenees dog on the front. There are fixed costs of \$640 to set up for production, and variable costs of \$39 per jacket. Write an equation that can be used to determine the total cost, $C(x)$, encountered by Marty's Company in producing x jackets, and use the equation to find the total cost of producing 69 jackets. 16) _____

- A) \$3343 B) \$3311 C) \$3331 D) \$3323

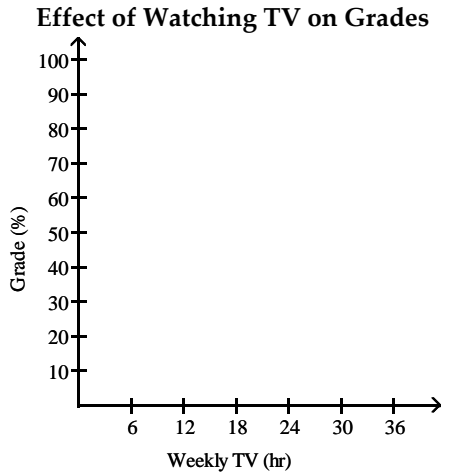
17) A lumber yard has fixed costs of \$5416.20 per day and variable costs of \$0.8 per board-foot produced. Lumber sells for \$2.60 per board-foot. How many board-feet must be produced and sold daily to break even? 17) _____

- A) 3009 board-feet B) 1592 board-feet
C) 6770 board-feet D) 2006 board-feet

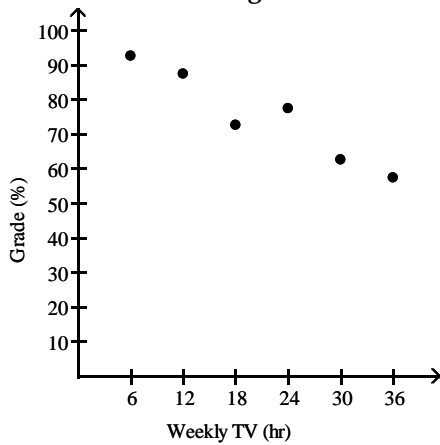
Plot and interpret the appropriate scatter diagram.

18) The table gives the times spent watching TV and the grades of several students. 18) _____

Weekly TV (h)	6	12	18	24	30	36
Grade (%)	92.5	87.5	72.5	77.5	62.5	57.5

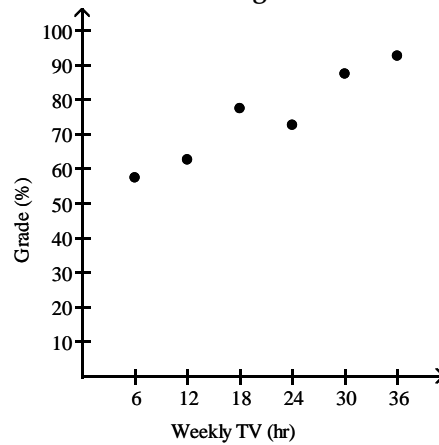


A) Effect of Watching TV on Grades



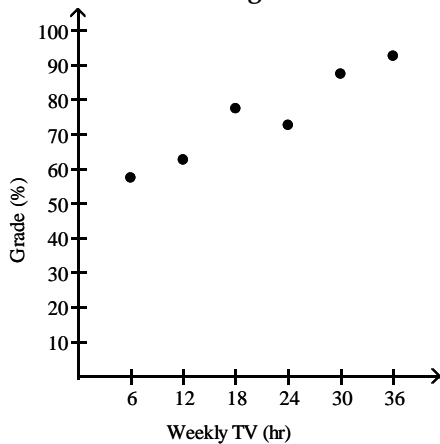
More hours spent watching TV may reduce grades.

B) Effect of Watching TV on Grades



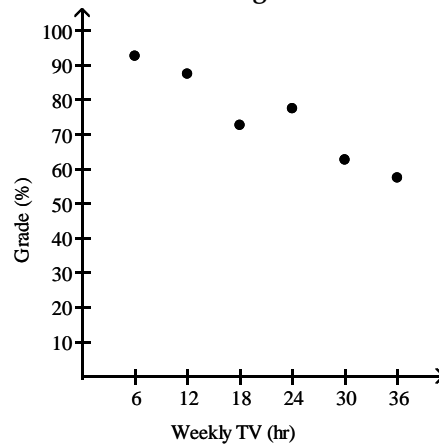
More hours spent watching TV may increase grades.

C) Effect of Watching TV on Grades



More hours spent watching TV may reduce grades.

D) Effect of Watching TV on Grades



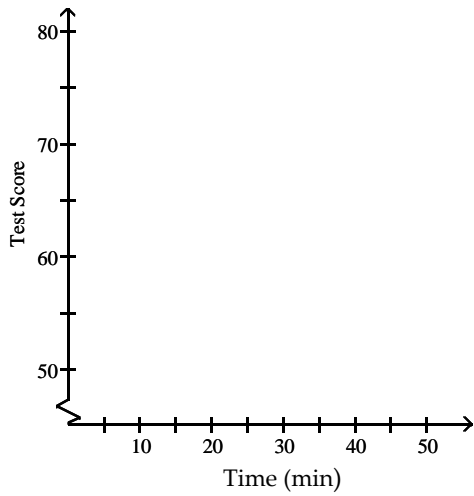
More hours spent watching TV may increase grades.

19) The table shows the study times and test scores for a number of students. Draw a scatter plot of score versus time treating time as the independent variable.

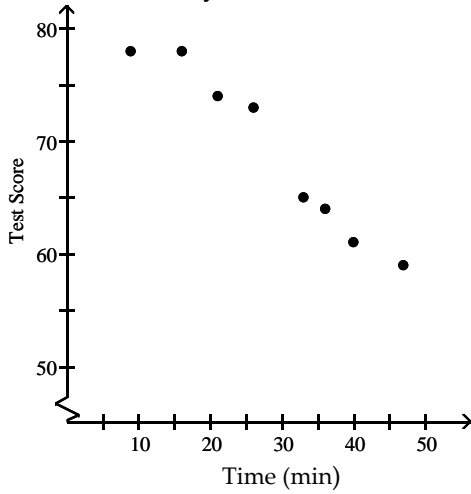
19) _____

Study Time (min)	9	16	21	26	33	36	40	47
Test Score	59	61	64	65	73	74	78	78

Effect of Study on Test Score

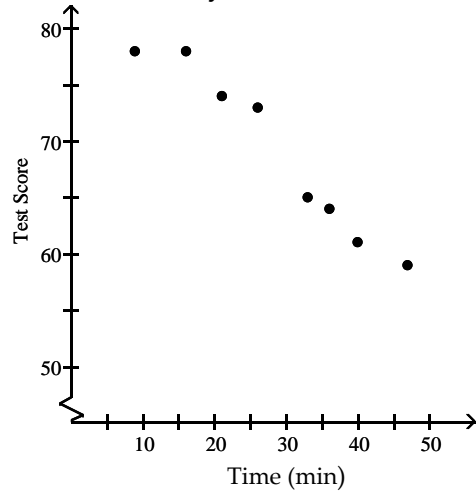


A) Effect of Study on Test Score



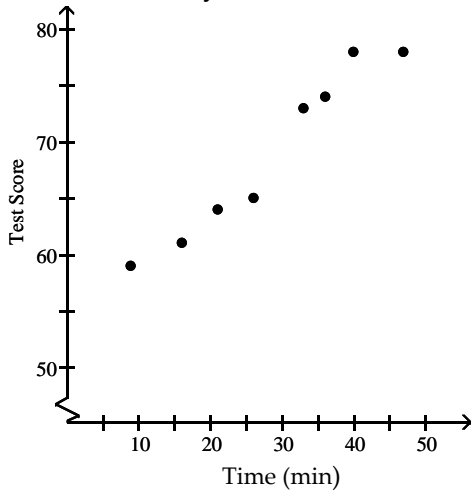
More time spent studying may decrease test scores.

B) Effect of Study on Test Score



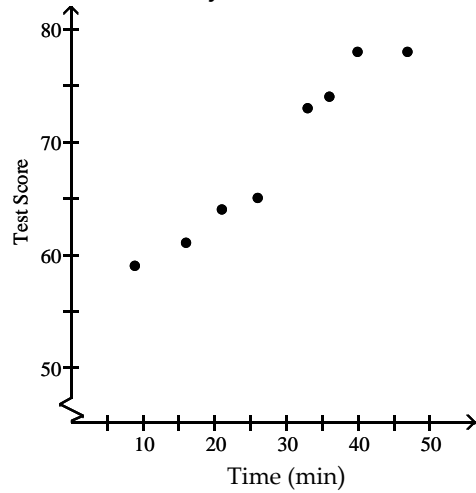
More time spent studying may increase test scores.

C) Effect of Study on Test Score



More time spent studying may increase test scores.

D) Effect of Study on Test Score

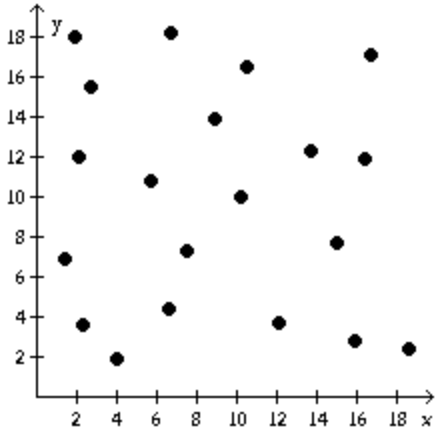


More time spent studying may decrease test scores.

Determine if the type of relation is linear, nonlinear, or none.

20)

20) _____



A) nonlinear

B) none

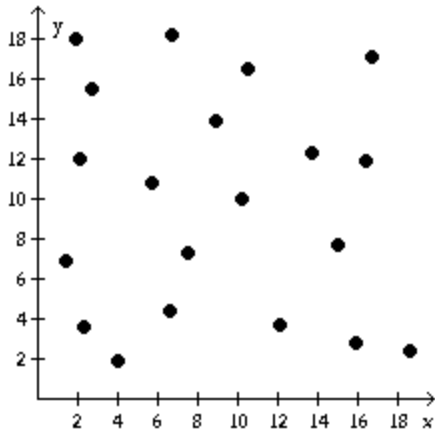
C) linear

Solve the problem.

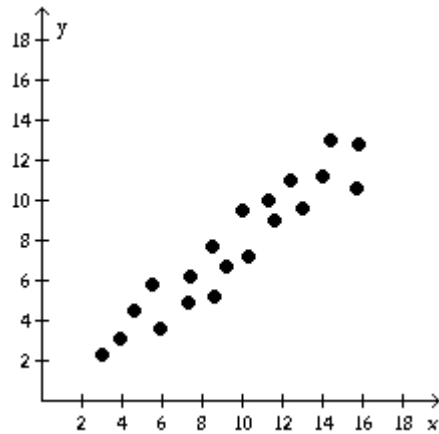
21) Identify the scatter diagram of the relation that appears linear.

21) _____

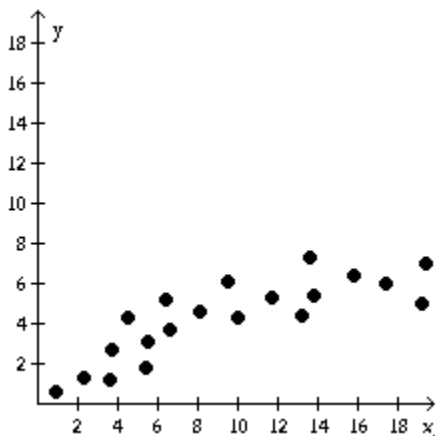
A)



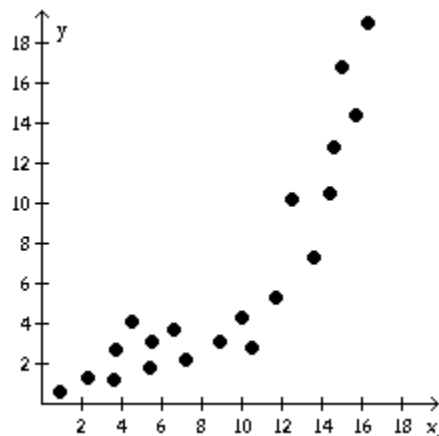
B)



C)



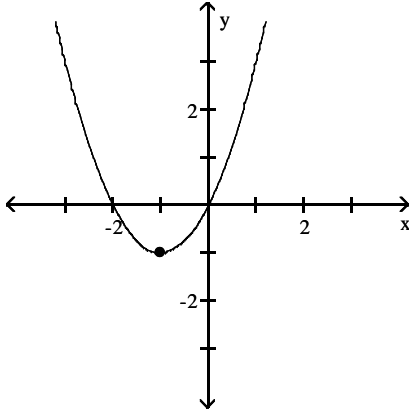
D)



Match the graph to one of the listed functions.

22)

22) _____



A) $f(x) = x^2 + 2x - 1$

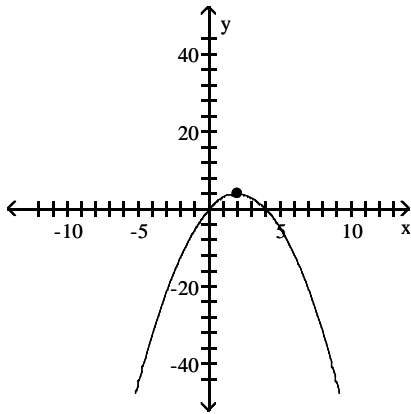
B) $f(x) = x^2 - 2x$

C) $f(x) = x^2 - 2x - 1$

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

23)

23) _____



A) $f(x) = x^2 + 4x$

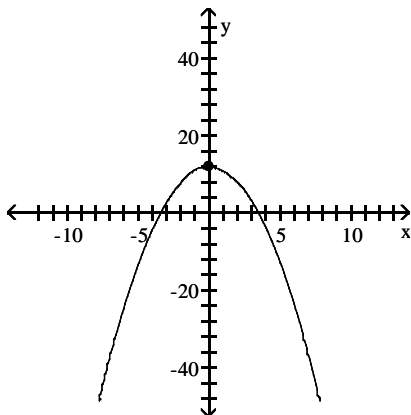
B) $f(x) = -x^2 + 4x$

C) $f(x) = -x^2 + 4$

D) $f(x) = x^2 + 4$

24)

24) _____



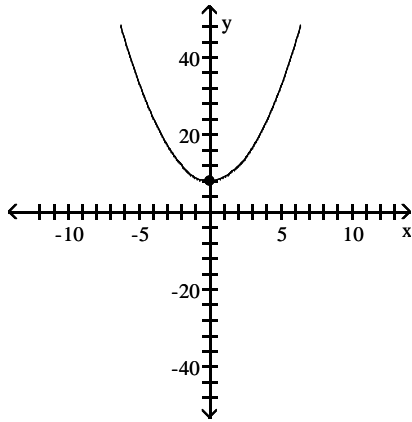
A) $f(x) = x^2 + 12x$

B) $f(x) = -x^2 + 12$

C) $f(x) = x^2 + 12$

D) $f(x) = -x^2 + 12x$

25)



25) _____

A) $f(x) = -x^2 + 8$

B) $f(x) = -x^2 + 8x$

C) $f(x) = x^2 + 8$

D) $f(x) = x^2 + 8x$

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

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

A) $(-25, 5); x = -25$

C) $(-5, -25); x = -5$

B) $(25, -5); x = 25$

D) $(5, -25); x = 5$

26) _____

27) $f(x) = x^2 - 8x$

A) $(4, -16); x = 4$

C) $(-16, 4); x = -16$

B) $(-4, 16); x = -4$

D) $(16, -4); x = 16$

27) _____

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

A) $(9, -3); x = 9$

B) $(-9, 3); x = -9$

C) $(3, 9); x = 3$

D) $(-3, -9); x = -3$

28) _____

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

A) $(-4, 2); x = -4$

B) $(4, -2); x = 4$

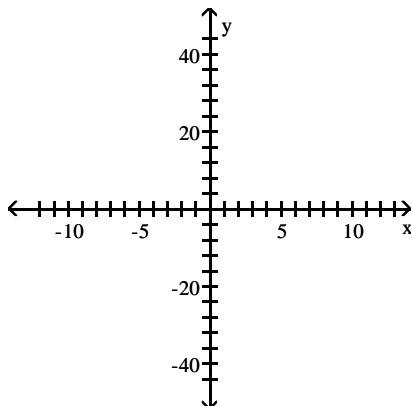
C) $(2, -4); x = 2$

D) $(-2, 4); x = -2$

29) _____

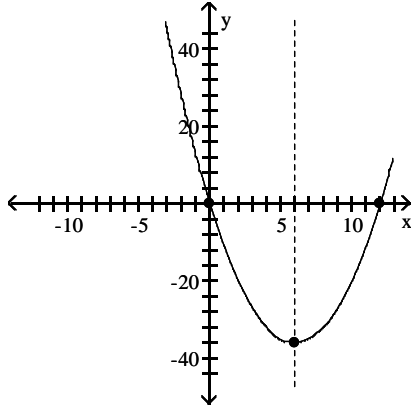
Graph the function using its vertex, axis of symmetry, and intercepts.

30) $f(x) = x^2 - 12x$

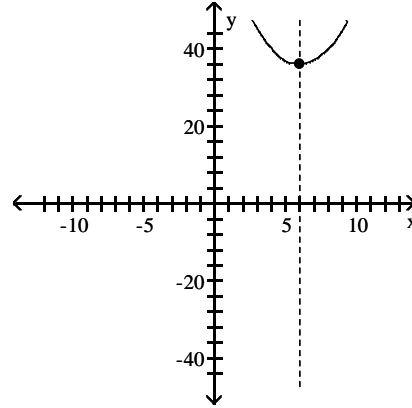


30) _____

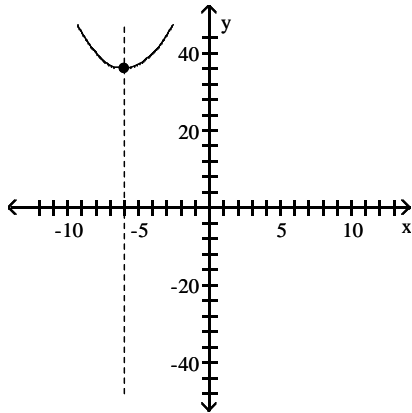
A) vertex $(6, -36)$
intercepts $(0, 0), (12, 0)$



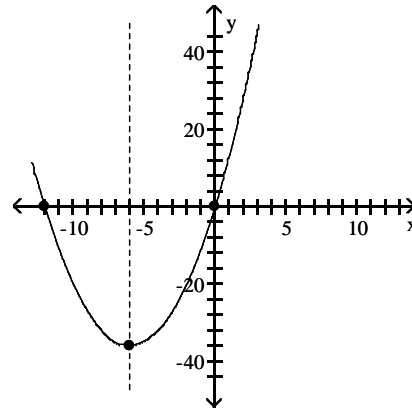
B) vertex $(6, 36)$
intercept $(0, 72)$



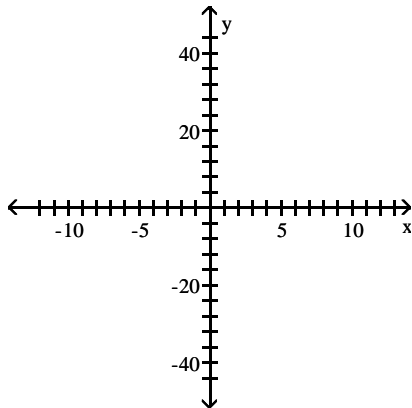
C) vertex $(-6, 36)$
intercept $(0, 72)$



D) vertex $(-6, -36)$
intercepts $(0, 0), (-12, 0)$

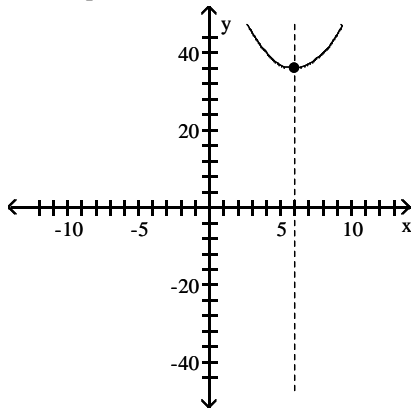


31) $f(x) = x^2 - 12x + 36$

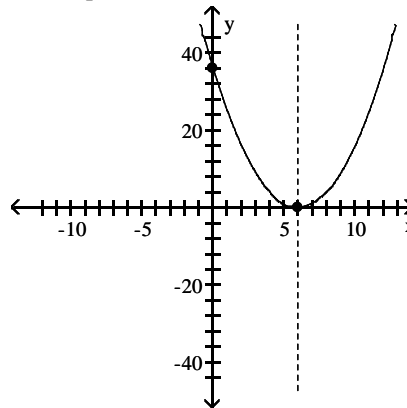


31) _____

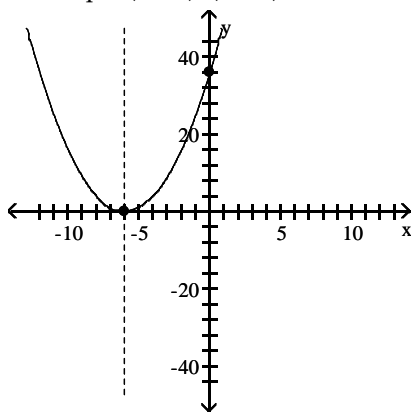
- A) vertex (6, 36)
intercept (0, 72)



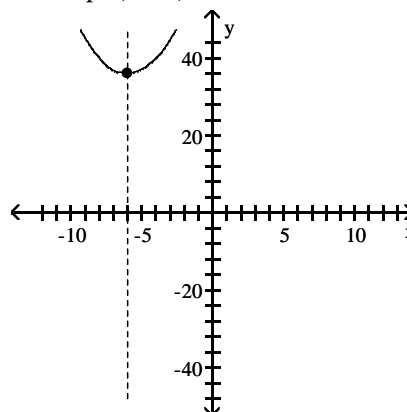
- B) vertex (6, 0)
intercepts (0, 36), (6, 0)



- C) vertex (-6, 0)
intercepts (0, 36), (-6, 0)



- D) vertex (-6, 36)
intercept (0, 72)



Determine the domain and the range of the function.

32) $f(x) = -x^2 + 4x$

- A) domain: all real numbers
range: $\{y \mid y \leq 4\}$
C) domain: $\{x \mid x \leq 2\}$
range: $\{y \mid y \leq 4\}$

- B) domain: all real numbers
range: $\{y \mid y \leq -4\}$
D) domain: $\{x \mid x \leq -2\}$
range: $\{y \mid y \leq 4\}$

32) _____

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

- A) domain: all real numbers
range: all real numbers
C) domain: all real numbers
range: $\{y \mid y \leq -9\}$

- B) domain: all real numbers
range: $\{y \mid y \leq 9\}$
D) domain: $\{x \mid x \leq -2\}$
range: $\{y \mid y \leq 9\}$

33) _____

34) $f(x) = x^2 + 12x + 36$

- A) domain: $\{x \mid x \geq 6\}$
range: $\{y \mid y \geq 0\}$
C) domain: $\{x \mid x \geq -6\}$
range: $\{y \mid y \geq 0\}$

- B) domain: all real numbers
range: $\{y \mid y \geq 36\}$
D) domain: all real numbers
range: $\{y \mid y \geq 0\}$

34) _____

Determine where the function is increasing and where it is decreasing.

- 35) $f(x) = x^2 - 6x + 5$ 35) _____
 A) increasing on $(3, \infty)$ decreasing on $(-\infty, 3)$
 B) increasing on $(-\infty, -4)$ decreasing on $(-4, \infty)$
 C) increasing on $(-\infty, 3)$ decreasing on $(3, \infty)$
 D) increasing on $(-4, \infty)$ decreasing on $(-\infty, -4)$
- 36) $f(x) = -x^2 + 4x + 5$ 36) _____
 A) increasing on $(2, \infty)$ decreasing on $(-\infty, 2)$
 B) increasing on $(-\infty, 9)$ decreasing on $(9, \infty)$
 C) increasing on $(9, \infty)$ decreasing on $(-\infty, 9)$
 D) increasing on $(-\infty, 2)$ decreasing on $(2, \infty)$
- 37) $g(x) = 11x^2 + 220x + 979$ 37) _____
 A) decreasing on $(-\infty, 10)$ increasing on $(10, \infty)$
 B) increasing on $(-\infty, -10)$ decreasing on $(-10, \infty)$
 C) decreasing on $(-\infty, -10)$ increasing on $(-10, \infty)$
 D) increasing on $(-\infty, -110)$ decreasing on $(-110, \infty)$

Determine, without graphing, whether the given quadratic function has a maximum value or a minimum value and then find that value.

- 38) $f(x) = x^2 - 7$ 38) _____
 A) minimum; 0 B) minimum; -7 C) maximum; 0 D) maximum; -7
- 39) $f(x) = -x^2 + 2x - 4$ 39) _____
 A) minimum; -3 B) maximum; -3 C) minimum; 1 D) maximum; 1
- 40) $f(x) = -3x^2 + 3x$ 40) _____
 A) maximum; $-\frac{3}{4}$ B) maximum; $\frac{3}{4}$ C) minimum; $-\frac{3}{4}$ D) minimum; $\frac{3}{4}$
- 41) $f(x) = -9x^2 - 2x - 7$ 41) _____
 A) maximum; $\frac{62}{9}$ B) minimum; $-\frac{62}{9}$
 C) minimum; $\frac{62}{9}$ D) maximum; $-\frac{62}{9}$

Solve the problem.

- 42) The manufacturer of a CD player has found that the revenue R (in dollars) is 42) _____
 $R(p) = -4p^2 + 1930p$, when the unit price is p dollars. If the manufacturer sets the price p to maximize revenue, what is the maximum revenue to the nearest whole dollar?
 A) \$931,225 B) \$1,862,450 C) \$465,613 D) \$232,806
- 43) The owner of a video store has determined that the cost C , in dollars, of operating the store is 43) _____
 approximately given by $C(x) = 2x^2 - 28x + 780$, where x is the number of videos rented daily. Find the lowest cost to the nearest dollar.
 A) \$584 B) \$878 C) \$682 D) \$388

44) The price p and the quantity x sold of a certain product obey the demand equation 44) _____

$$p = -\frac{1}{7}x + 160, \quad 0 \leq x \leq 1120.$$

What quantity x maximizes revenue? What is the maximum revenue?

- A) 1120; \$44,800 B) 840; \$33,600 C) 560; \$44,800 D) 280; \$33,600

45) The profit that the vendor makes per day by selling x pretzels is given by the function 45) _____

$P(x) = -0.004x^2 + 3.2x - 250$. Find the number of pretzels that must be sold to maximize profit.

- A) 400 pretzels B) 1.6 pretzels C) 800 pretzels D) 390 pretzels

46) You have 172 feet of fencing to enclose a rectangular region. Find the dimensions of the rectangle that maximize the enclosed area. 46) _____

- A) 45 ft by 41 ft B) 43 ft by 43 ft C) 86 ft by 21.5 ft D) 86 ft by 86 ft

47) The number of mosquitoes $M(x)$, in millions, in a certain area depends on the June rainfall x , in inches: $M(x) = 10x - x^2$. What rainfall produces the maximum number of mosquitoes? 47) _____

- A) 100 in. B) 5 in. C) 10 in. D) 0 in.

Solve the inequality.

48) $x^2 - 3x - 10 \leq 0$ 48) _____

- A) $(-\infty, -2]$ B) $(-\infty, -2]$ or $[5, \infty)$
C) $[5, \infty)$ D) $[-2, 5]$

49) $x^2 - 5x \geq 0$ 49) _____

- A) $(-\infty, 0]$ or $[5, \infty)$ B) $[0, 5]$
C) $[-5, 0]$ D) $(-\infty, -5]$ or $[0, \infty)$

50) $x^2 - 81 \leq 0$ 50) _____

- A) $(-\infty, -9]$ or $[9, \infty)$ B) $[-81, 81]$
C) $[-9, 9]$ D) $(-\infty, -81]$ or $[81, \infty)$