Directions: Answer the following question(s).

1 **What are the coordinates of the vertex of the graph of $f(x) = (x - 3)^2 - 2.5$?**

A. (–3, –2.5)
B. (–2.5, 3)
C. (3, –2.5)
D. (–3, 2.5)

2 **What is the minimum point on a graph of $f(x) = (x - 1)^2 - 3$?**

A. (–2, –2)
B. (–1, –3)
C. (–3, 1)
D. (1, –3)

3 Ana drew the parent graph of $y=x^2$. How should she transform that graph to produce the graph of $y=4(x-3)^2$?

A. She should shift it 3 units to the left.
B. She should shift it 3 units to the right.
C. She should shift it 3 units up.
D. She should shift it 3 units down.

4 **Stella completed the square for the expression $2x^2 + 5x - 12$ and correctly obtained $2\left(x + \frac{5}{4}\right)^2 - \frac{121}{8}$. What is the minimum value of $y = 2x^2 + 5x - 12$?**

A. $-\frac{121}{8}$
B. $-\frac{5}{4}$
C. $\frac{5}{4}$
D. $\frac{121}{8}$

Directions: Answer the following question(s).

5 **Three statements about $f(x) = 2(x - 3)^2 + 5$ are given.**

1. The axis of symmetry is $x = 3$.
2. The vertex is located at (3, 5).
3. The function's minimum value is 5.

Which statement or statements are correct?

A. all 3 statements
B. statement 3 only
C. statements 1 and 2
D. statements 2 and 3

6 **What is the minimum value of $f(x) = x^2 - 10x + 19$?**

A. –10
B. –6
C. 5
D. 19

7 **After transforming $f(x) = 2x^2 + 4x + 3$ into vertex form, the vertex is easily identifiable. Which ordered pair is the vertex?**

A. (0, 3)
B. (1, 1)
C. (–1, 1)
D. (–3, 0)

8 **The factored form of a quadratic expression is $x(x - 4)$. The ordered pair (0, 0) represents one of the zeros of the associated quadratic function. Which ordered pair represents the other zero?**

A. (0, –4)
B. (–4, 0)
C. (4, 0)
D. (0, 4)

9 **The quadratic expression $x^2 - 2x - 35$ can be factored into $(x + 5)(x - 7)$. Which ordered pairs represent the zeros of this expression's related quadratic function?**

A. (5, 0) and (–7, 0)
B. (–5, 0) and (7, 0)
C. (0, –5) and (0, 7)
D. (0, 5) and (0, –7)

Directions: Answer the following question(s).

10 **Which statement about the linear factors and zeros of a quadratic function is always true?**

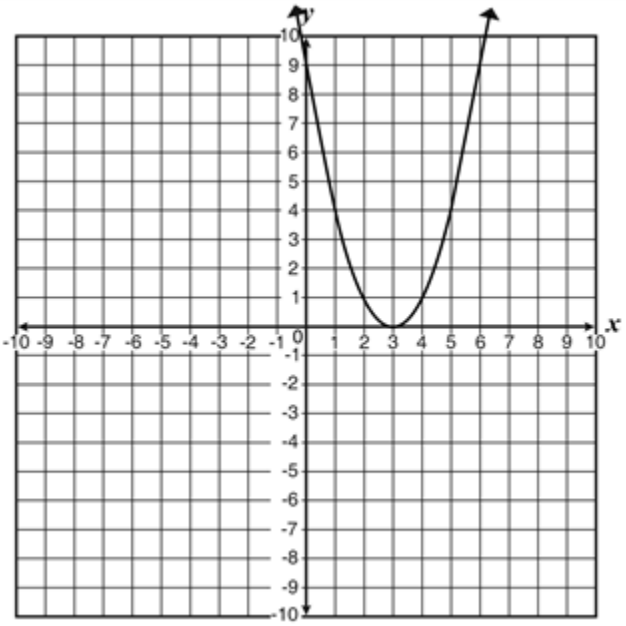
A. The constants of the linear factors are the opposite of the function's zeros.

B. A function's zeros can be determined by setting each linear factor equal to 0 and solving.

C. If a function's zero is an integer, then the coefficient of the variable in the linear factor must be one.

D. Multiplying the constants of the linear factors gives one of the function's zeros, and adding the constants gives the other zero.

11 **The graph of a quadratic equation is shown in the coordinate plane.**



Which function matches this graph?

A. $f(x) = x^2 - 3$

B. $f(x) = x^2 + 9$

C. $f(x) = x^2 - 6x + 9$

D. $f(x) = x^2 + 6x + 9$

Directions: Answer the following question(s).

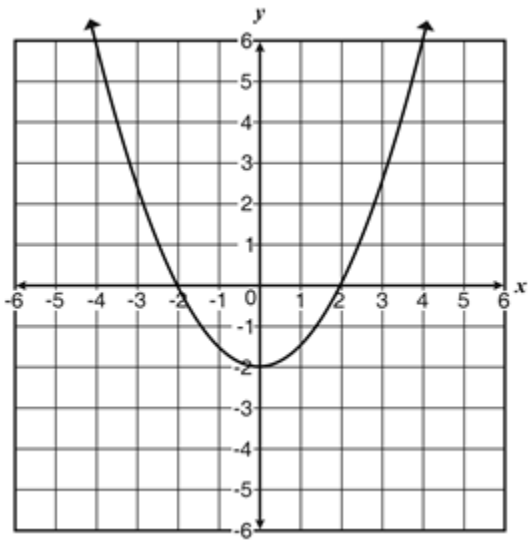
12 Look at function below.

$f(x) = 4x^2 + 3x - 6$

What is the value of $f(-2)$?

A. 4
B. 64
C. -27
D. -4

13 **The graph of $y = \frac{1}{2}x^2 - 2$ is shown.**



Which statement describes the change in the appearance of the graph if the $\frac{1}{2}$ is changed to a 2?

A. The graph will be wider.
B. The graph will be narrower.
C. The graph will have a new vertex.
D. The graph will open in the opposite direction.

14 **Which of the following statements is true concerning $f(x) = x^2 - 2x - 24$?**

A. The zeros of $f(x)$ are 4 and –6 since $f(x) = (x + 4)(x - 6)$.
B. The zeros of $f(x)$ are 4 and –6 since $f(x) = (x - 4)(x + 6)$.
C. The zeros of $f(x)$ are –4 and 6 since $f(x) = (x + 4)(x - 6)$.
D. The zeros of $f(x)$ are –4 and 6 since $f(x) = (x - 4)(x + 6)$.

Directions: Answer the following question(s).

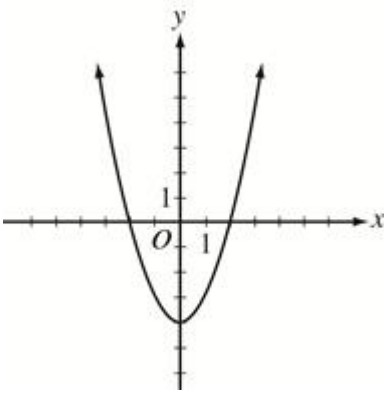
15 **Changing the value of *a* in $y = ax^2 + c$ to its opposite has what effect on the graph?**

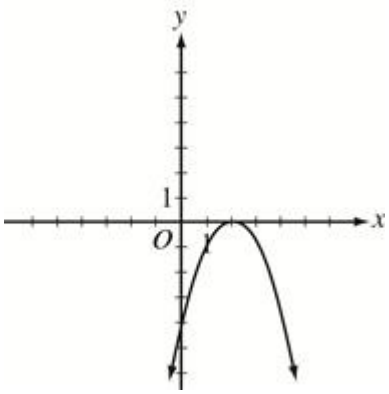
A. It changes the width of the graph.
B. It changes the vertex of the graph.
C. It changes the graph's axis of symmetry.
D. It changes the direction that the graph opens.

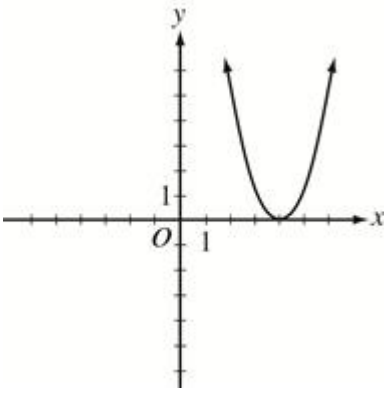
16 Which equation represents a parabola with the same vertex as $y=4(x-5)^2+20$ but that opens in the opposite direction?

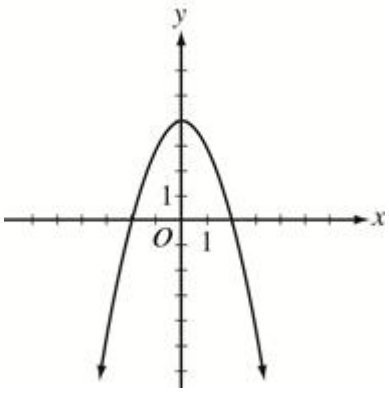
A. $y=-4(x-5)^2+20$
B. $y=4(x+5)^2+20$
C. $y=4(x+5)^2 - 20$
D. $y= -4(x+5)^2 - 20$

17 **Which of the following is the graph of $y = -x^2 + 4$?**

A.


C.


B.


D.


Directions: Answer the following question(s).

18 **Tricia completed the square of the quadratic function $f(x) = x^2 + 14x + 2$ and determined the coordinates of the minimum value are $(-7, -47)$. Which equation must be Tricia's result?**

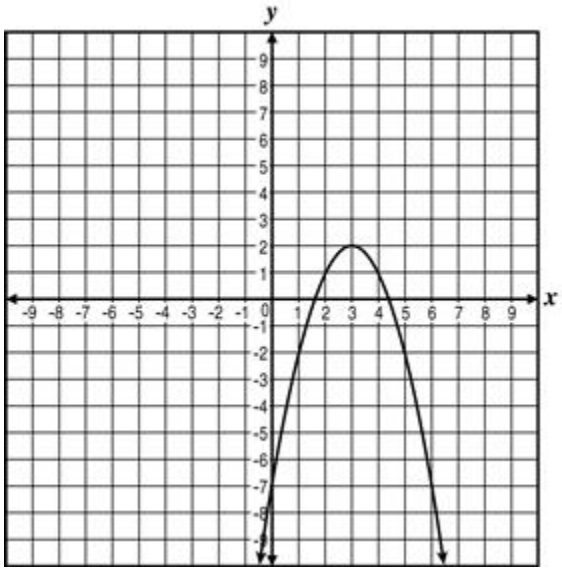
A. $f(x) = (x+7)^2 - 47$

B. $f(x) = (x+7)^2 + 47$

C. $f(x) = (x-7)^2 - 47$

D. $f(x) = (x-7)^2 + 47$

19 **The graph of parabola is shown.**



Which equation is BEST represented by the graph?

A. $y = -(x-3)^2 + 2$

B. $y = -(x+3)^2 + 2$

C. $y = -(x-3)^2 - 2$

D. $y = -(x+3)^2 - 2$

Directions: Answer the following question(s).

20 **Which sentence describes the relationship between the graphs of $y = x^2$ and $y = (x - 3)^2$?**

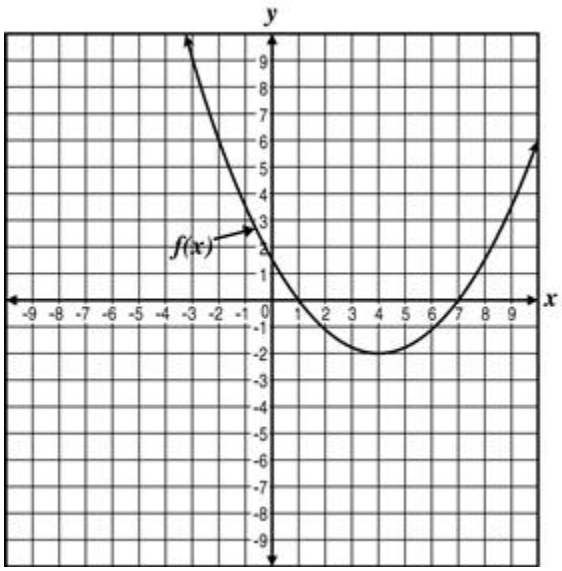
A. The graph of $y = (x - 3)^2$ is translated 3 units up from $y = x^2$.

B. The graph of $y = (x - 3)^2$ is translated 3 units down from $y = x^2$.

C. The graph of $y = (x - 3)^2$ is translated to the left 3 units of $y = x^2$.

D. The graph of $y = (x - 3)^2$ is translated to the right 3 units of $y = x^2$.

21 **A function $f(x)$, is graphed on the coordinate plane below.**



For what value of *x* does $f(x) = -2$?

A. 1

B. 4

C. 6

D. 7

22 **Gerry plotted the equation $y = x^2$ on a coordinate grid. He wants to translate the graph 4 units to the left and 3 units up. What will be the equation of the translated graph?**

A. $y = (x + 3)^2 + 4$

B. $y = (x + 4)^2 + 3$

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

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

Directions: Answer the following question(s).

23 **The graph of which function is wider than the graph of** $f(x) = 2x^2 - 4$?

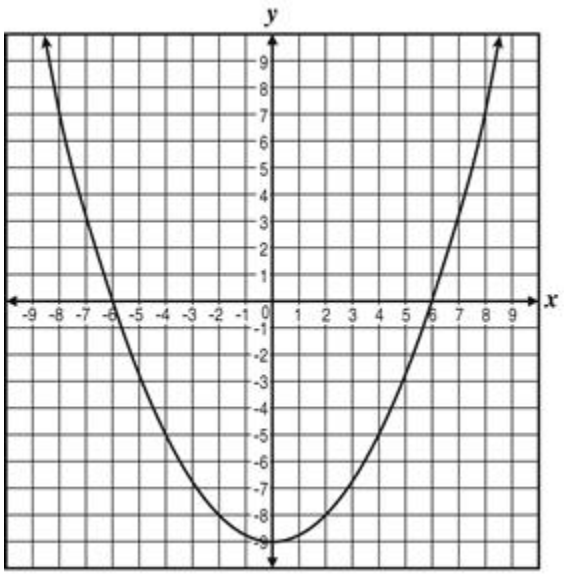
A. $g(x) = 3x^2 - 4$

B. $g(x) = 2x^2 + 4$

C. $g(x) = 2x^2 - 8$

D. $g(x) = x^2 - 4$

24 **The graph of parabola** $y = 0.25x^2 - 9$ **is shown on the coordinate plane below.**



According to the graph, for which values of *x* is *y* always negative?

A. $x > 0$

B. $x < -9$

C. $x < -6$ and $x > 0$

D. $x > -6$ and $x < 6$

25 **Which equality represents** $y = 3x^2 + 2$ **written in function notation?**

A. $f(y) = 3x^2 + 2$

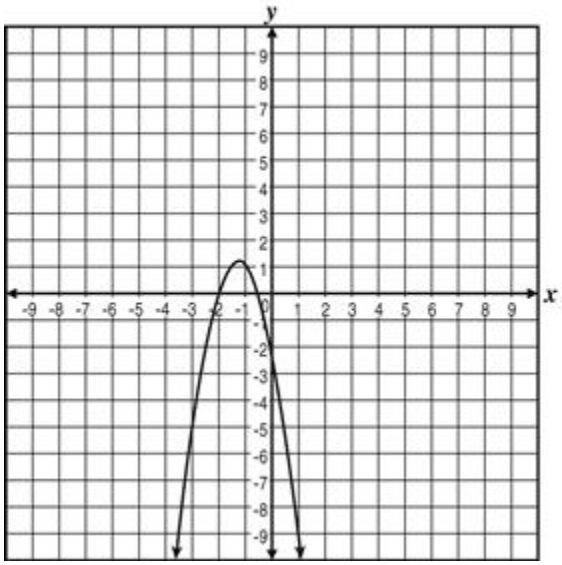
B. $f(x) = 3x^2 + 2$

C. $f(3) = x^2 + 2$

D. $f(2) = 3x^2$

Directions: Answer the following question(s).

26 **The graph below represents the function** $f(x) = -2x^2 - 5x - 2.$



Which statement is true?

A. There are no *y*-intercepts.
B. There are no *x*-intercepts.
C. There is a *y*-intercept at (0, – 2).
D. There is a *x*-intercept at (0, – 2).

27 **Which describes how the graph of** $y = -x^2$ **differs from the graph of** $y = x^2$ **?**

A. The graph of $y = -x^2$ is wider.
B. The graph of $y = -x^2$ opens up.
C. The graph of $y = -x^2$ opens down.
D. The graph of $y = -x^2$ is more narrow.

28 **What transformation would occur to the parent function,** $f(x) = x^2$**, to arrive at the new equation,** $f(x) = (x - 2)^2 - 1$**?**

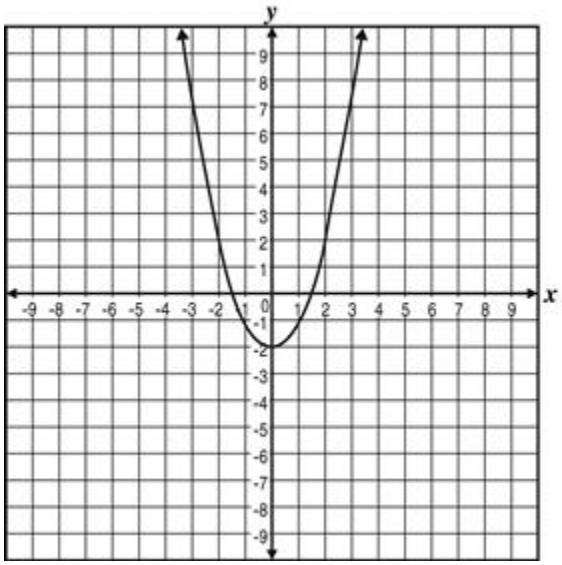
A. 2 units left and 1 unit down
B. 2 units left and 1 unit up
C. 2 units right and 1 unit down
D. 2 units right and 1 unit up

Directions: Answer the following question(s).

29 **Which of the following is equivalent to finding the "zeros" of a function?**

A. origin
B. slope
C. *x*-intercepts
D. *y*-intercepts

30 **The graph of $y = x^2 - 2$ is shown below.**



What is the solution if *x*=0?

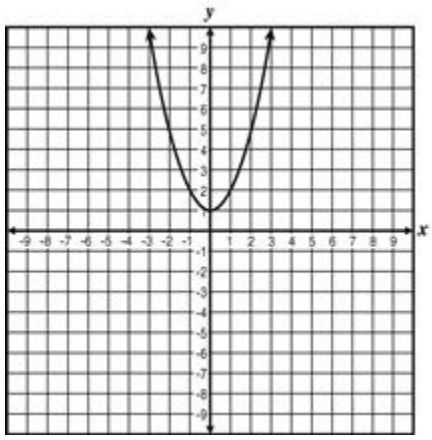
A. -2
B. -1
C. 0
D. 2

31 **What is the number of *x*-intercepts of the graph of the function $f(x) = 16x^2 + 25$?**

A. 0
B. 1
C. 2
D. 3

Directions: Answer the following question(s).

32 **Study this graph of a function.**



Which of these equations represents the function?

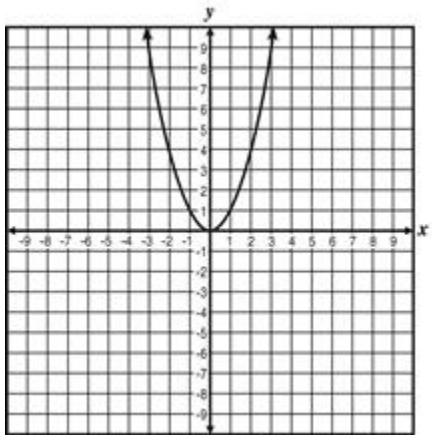
A. $f(x) = x^2$

B. $f(x) = x^2 + 1$

C. $f(x) = x^3$

D. $f(x) = x^3 + 1$

33 **What is the equation of the algebraic function that is shown in the graph?**



A. $f(x) = |x|$

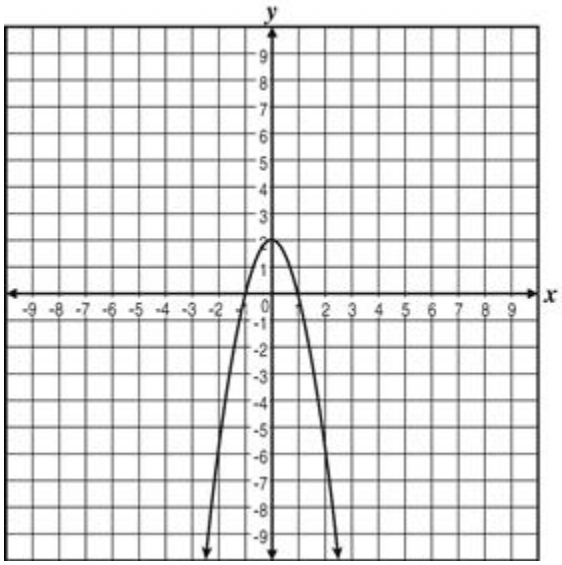
B. $f(x) = x^2$

C. $f(x) = x^3$

D. $f(x) = \sqrt{x}$

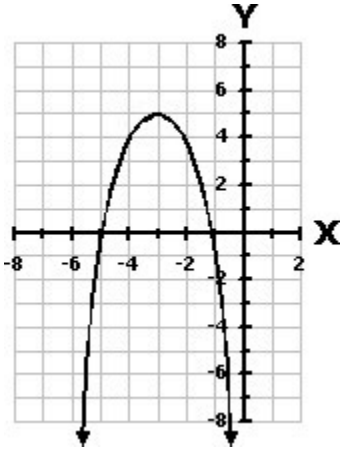
Directions: Answer the following question(s).

34 **Which describes the zeros and maximum of this graph?**



A. Zeros are –2 and 2; maximum is 6.
B. Zeros are –6 and 6; maximum is 1.
C. Zeros are –1 and 1; maximum is 2.
D. Zero is 2; maximum is 0.

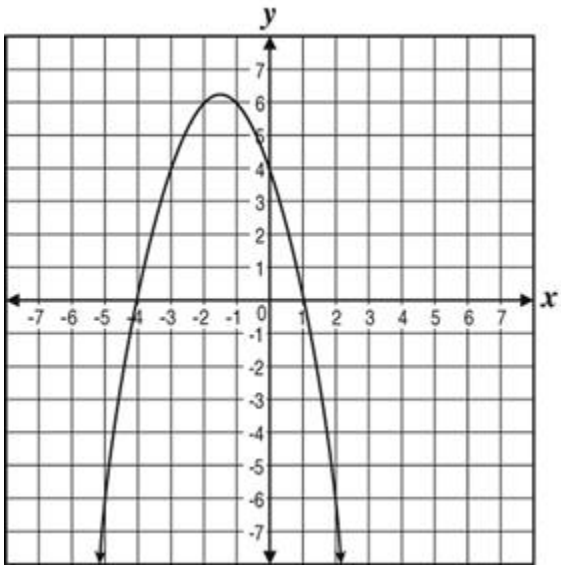
35 **Which of the following represents the minimum(s) of the graph shown below?**



A. (–3 , 5)
B. (–5 , 0) and (–1 , 0)
C. (–5.5 , –8) and (–0.5 , –8)
D. There is no minimum

Directions: Answer the following question(s).

36 **Which point on the parabola is one of the roots of the quadratic equation** $y = -x^2 - 3x + 4$?



A. $(-4, 0)$

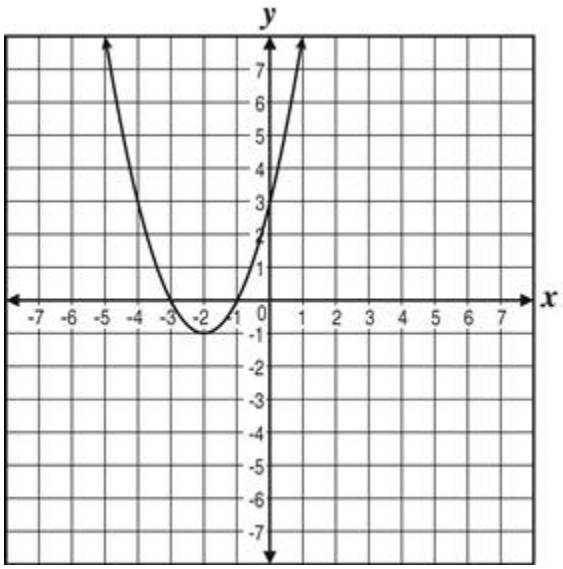
B. $(0, -4)$

C. $(0, 4)$

D. $(4, 0)$

Directions: Answer the following question(s).

37 **The graph of $y = x^2 + 4x + 3$ is shown below.**



Based on the graph, which point represents a root of the equation $x^2 + 4x + 3 = 0$?

A. $(0, 3)$

B. $(-1, 0)$

C. $(-2, 1)$

D. $(-4, 3)$

38 **Which equation is equivalent to $6t - t^2 - 9 = 0$?**

A. $(t - 3)(t - 3) = 0$

B. $(3 + t)(3 + t) = 0$

C. $(t + 3)(t - 3) = 0$

D. $(3 + t)(3 - t) = 0$

39 **If $f(x) = 3x^2 + 10$, what is $f(-7)$?**

A. -137

B. -32

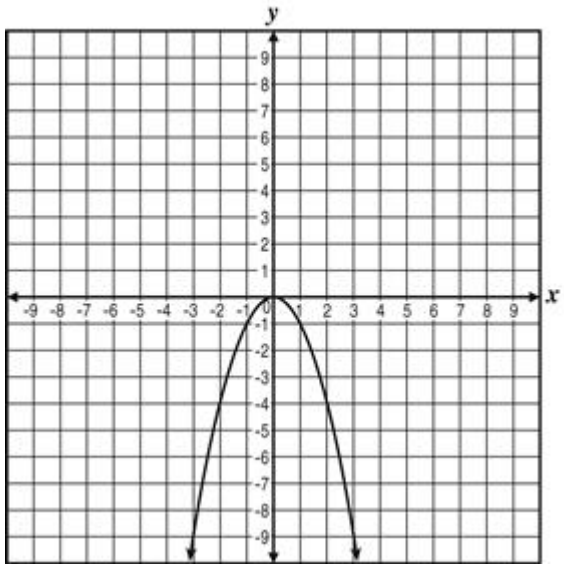
C. 52

D. 157

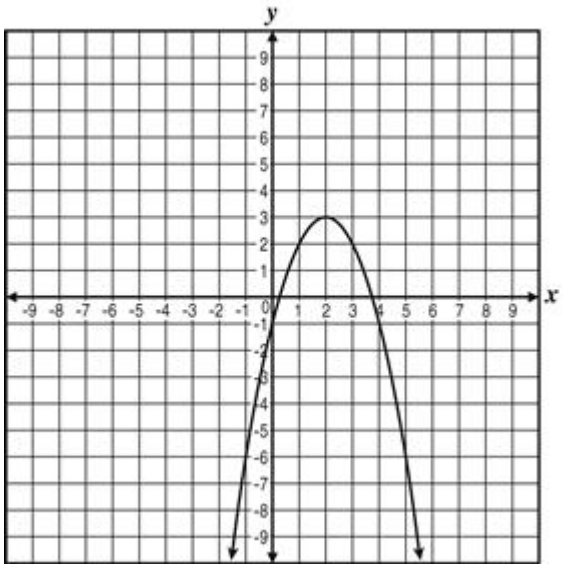
Directions: Answer the following question(s).

40 **Melissa graphed a parabola with vertex at $(3, 2)$, congruent to the parabola $y = -x^2$, and opening downward. Which graph shows Melissa's parabola?**

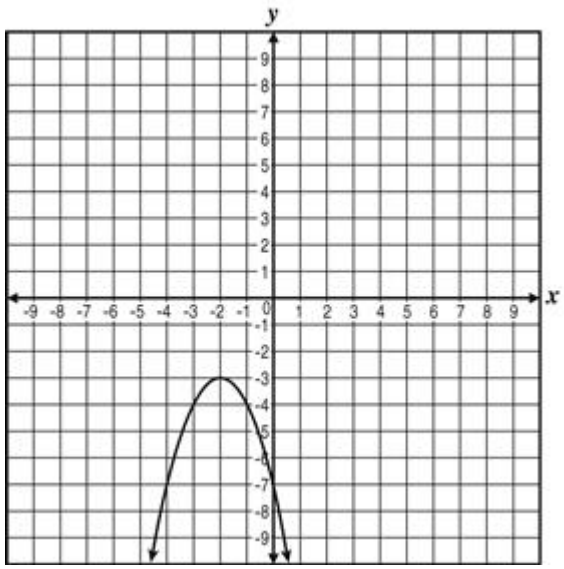
A.



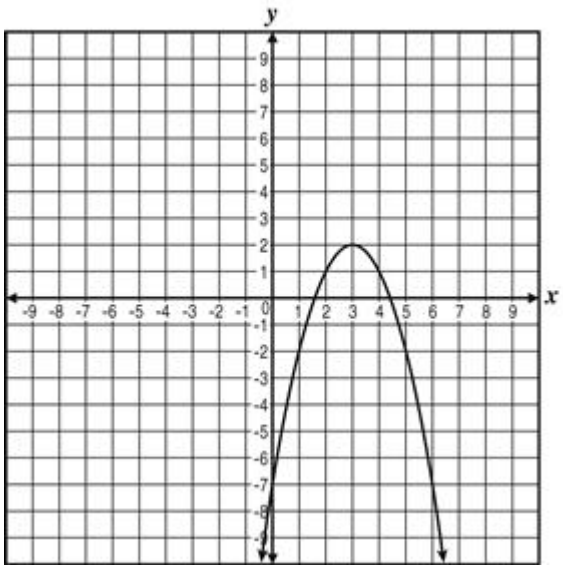
C.



B.



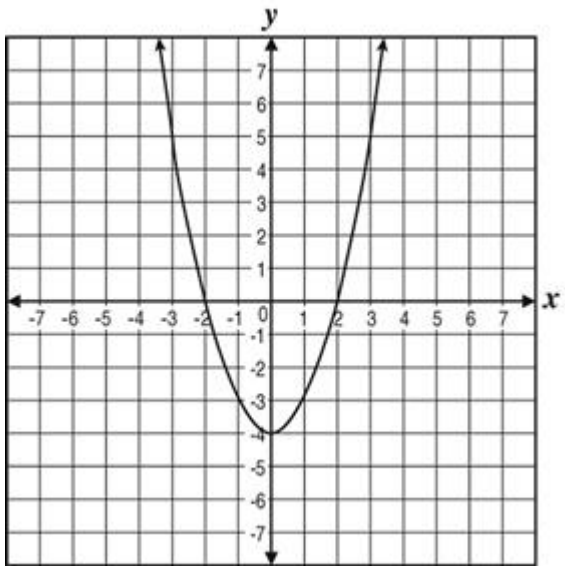
D.



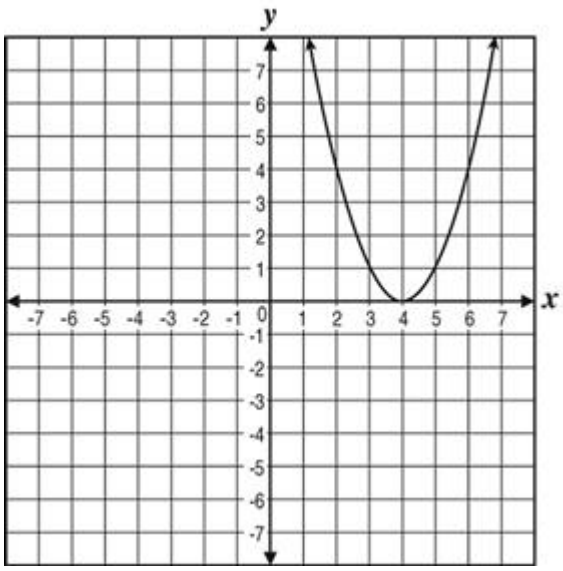
Directions: Answer the following question(s).

41 **Which graph represents the quadratic function** $y = x^2 - 4$?

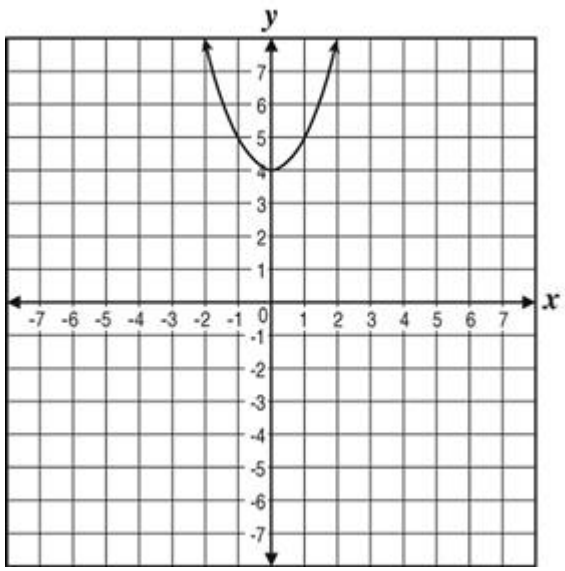
A.



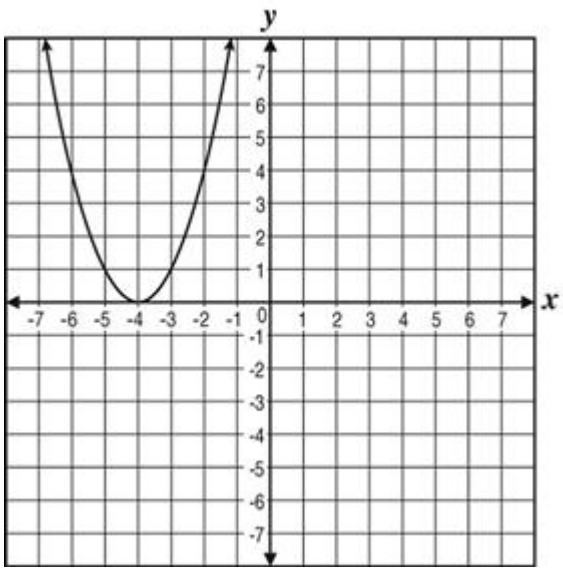
C.



B.



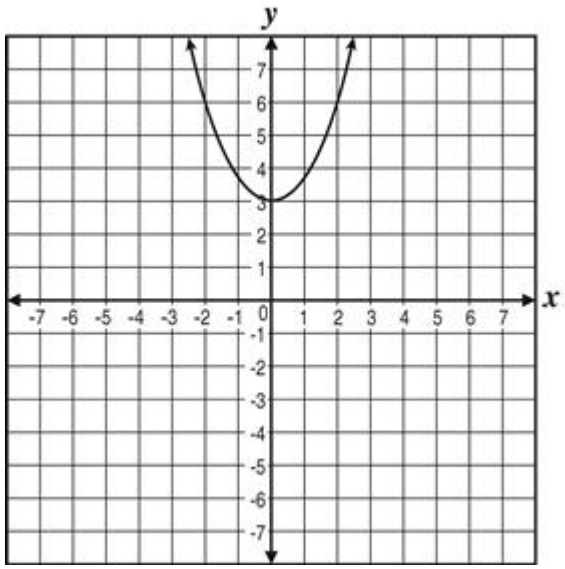
D.



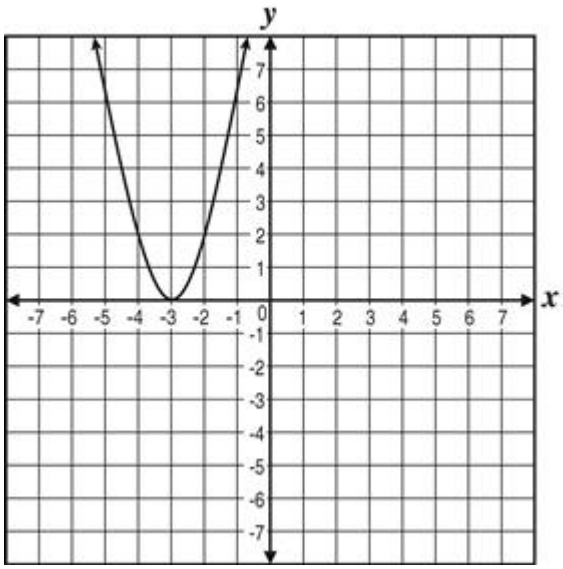
Directions: Answer the following question(s).

42 **Which graph is the graph of an equation that has a double root of 3?**

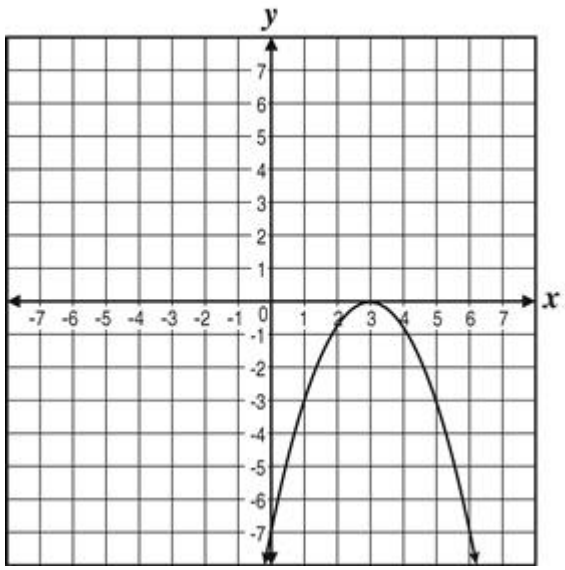
A.



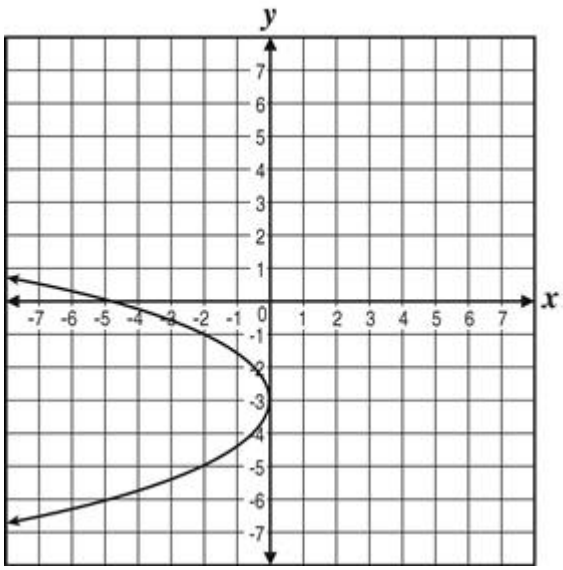
C.



B.



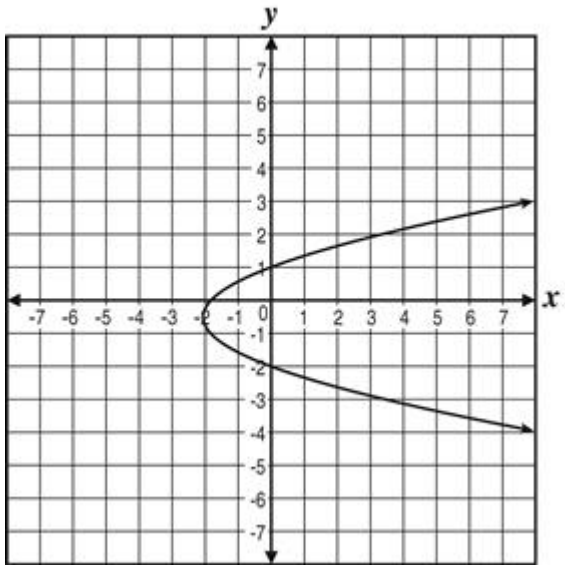
D.



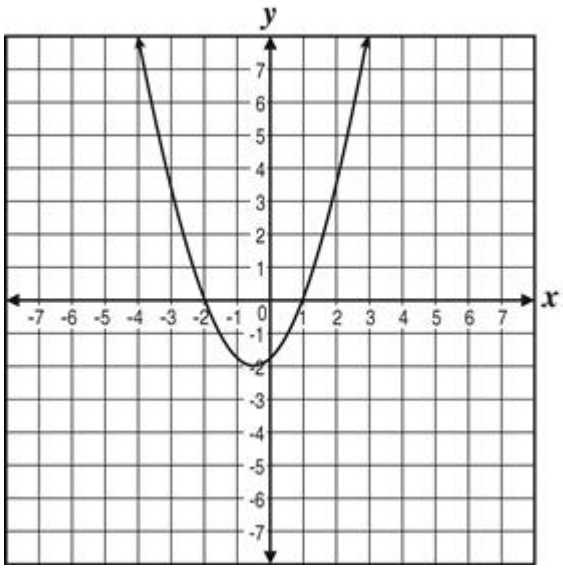
Directions: Answer the following question(s).

43 **Which of the following graphs has *x*-intercepts of -1 and 2?**

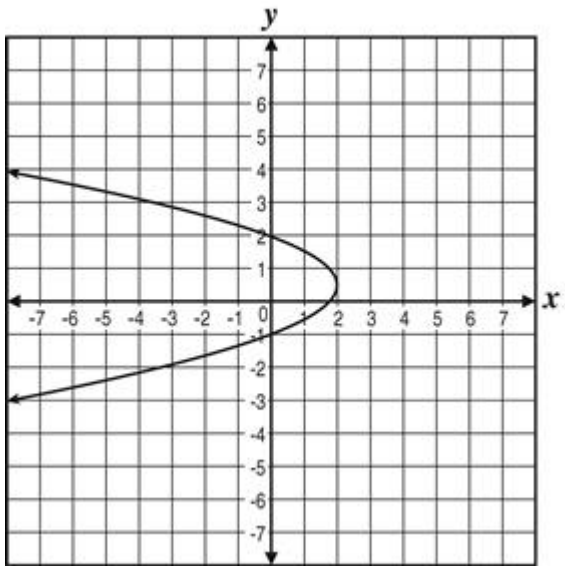
A.



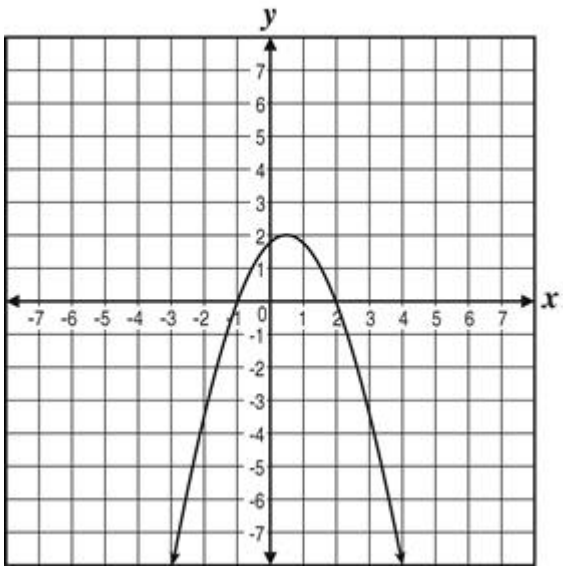
C.



B.



D.



44 **A graph of a quadratic function has *x*-intercepts of $(6, 0)$ and $(-4, 0)$. Which quadratic function could be represented by this graph?**

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

B. $f(x) = x^2 + 10x - 24$

C. $f(x) = x^2 - 2x - 24$

D. $f(x) = x^2 + 2x - 24$

Directions: Answer the following question(s).

45 **What are the *x*- and *y*-intercepts of the graph** of the equation $3x - 4y = -1$?

A. x–intercept: $-\frac{1}{3}$; y–intercept: -1

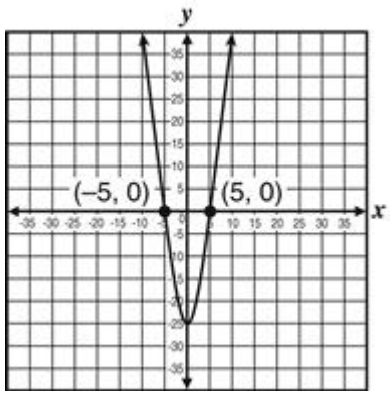
B. x–intercept: $\frac{1}{4}$; y–intercept: -1

C. x–intercept: $-\frac{1}{3}$; y–intercept: $\frac{1}{4}$

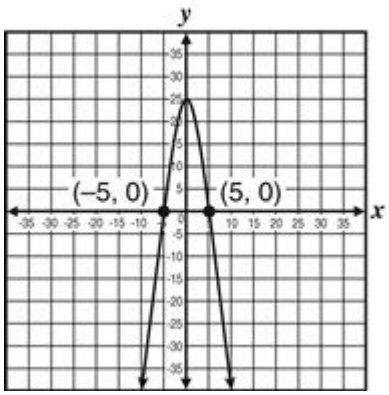
D. x–intercept: $\frac{1}{4}$; y–intercept: $-\frac{1}{3}$

46 **Which graph shows the solution for** $y = x^2 - 25$ **when** $y = 0$?

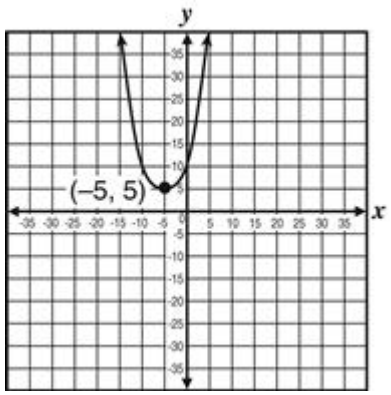
A.



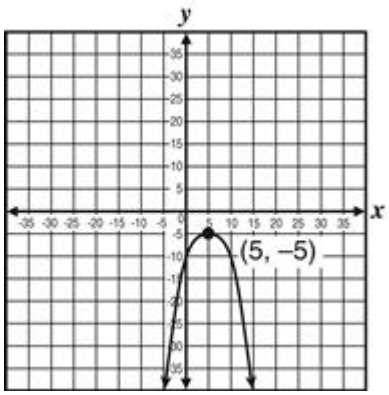
C.



B.

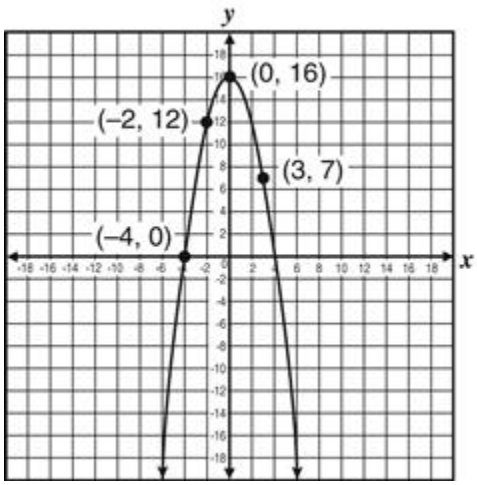


D.



Directions: Answer the following question(s).

47 **The graph of the equation $y = -x^2 + 16$ is shown below.**



From the graph, which value of *x* is a solution to the equation $-x^2 + 16 = 0$?

A. $x = 16$
B. $x = 3$
C. $x = -2$
D. $x = -4$

48 **Which generalization about the *y*-intercept for any equation is correct?**

A. The *y*-intercept is located at the origin.
B. The *y*-intercept is the point located on the *x*-axis.
C. The *y*-intercept is the value of *x* when *y* is set equal to 0.
D. The *y*-intercept is the value of the equation when *x* equals 0.

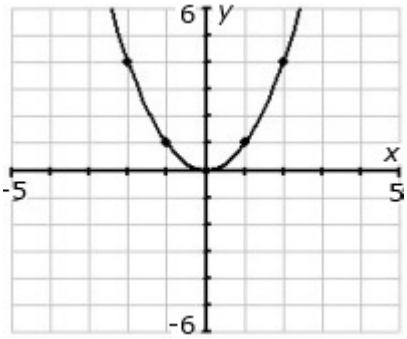
49 **Which statement describes the graph of $x = -2y^2 + 4$?**

A. *y*-intercept at (0, 4), downward curve
B. *y*-intercept at (0, 4), upward curve
C. *x*-intercept at (4, 0), left curve
D. x-intercept at (−4, 0), right curve

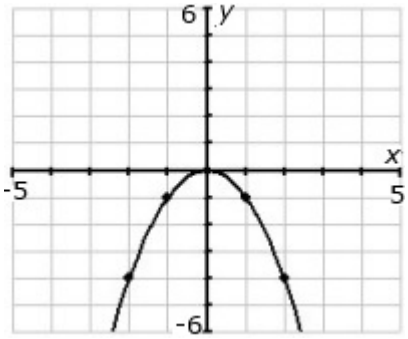
Directions: Answer the following question(s).

50 **Which of the following graphs represents the equation $y = -x^2 + 5$?**

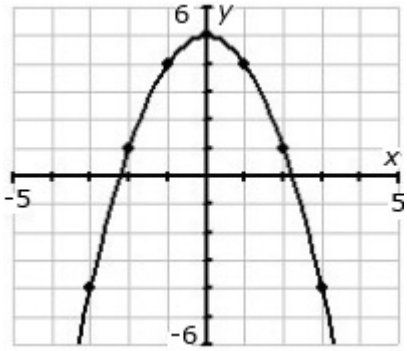
A.



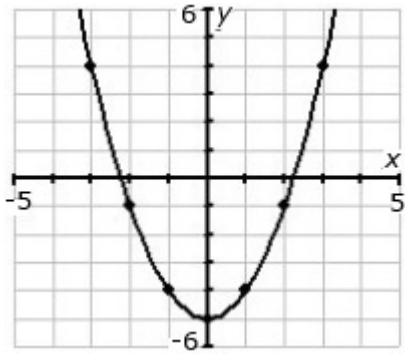
C.



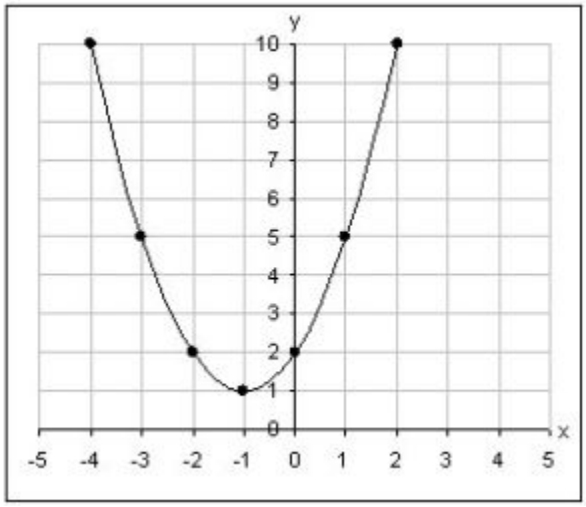
B.



D.



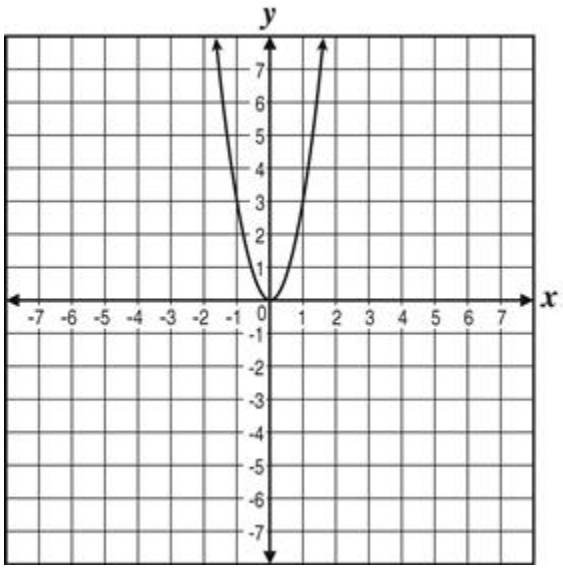
51 **What is the minimum of the graph shown below?**



A. (–4 , 10)
B. (–1 , 1)
C. (2 , 10)
D. There is no minimum.

Directions: Answer the following question(s).

52 **Which of the following functions does the graph represent?**



A. $y = 3x$

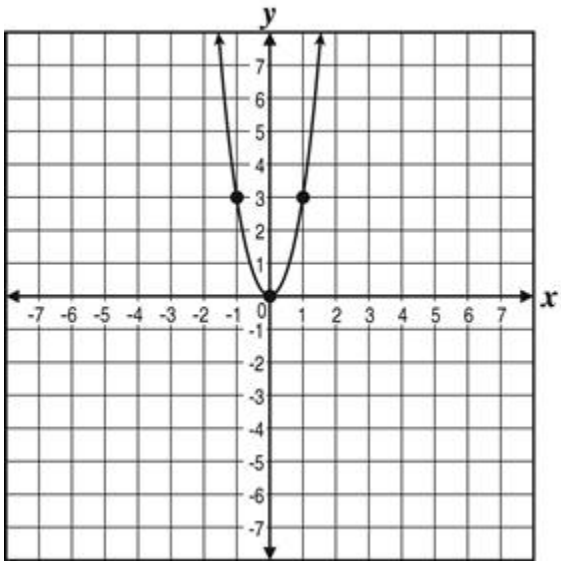
B. $y = 3x^2$

C. $y = 3x^3$

D. $y = 3 \mid x \mid$

Directions: Answer the following question(s).

53 **Which equation BEST represents the graph?**



A. $y = \frac{1}{3}x^2$

B. $y = 3x^2$

C. $y = -\frac{1}{3}x^2$

D. $y = -3x^2$

54 **Solve.**

$x^2 + 2x - 15 = 0$

A. $x = 5, x = 3$

B. $x = -5, x = -3$

C. $x = -3, x = 5$

D. $x = -5, x = 3$

Directions: Answer the following question(s).

55 **Solve for *x*:**

$(2x + 1)(3x – 2)(x – 1) = 0$

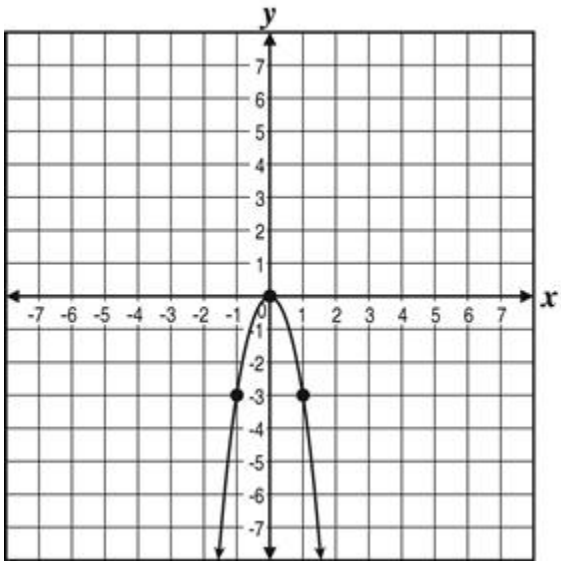
A. $-\frac{1}{2}$

B. $\frac{2}{3}$

C. 1

D. $-\frac{1}{2}$ or $\frac{2}{3}$ or 1

56 **Which equation BEST represents the graph on this grid?**



A. $y = \frac{1}{3}x^2$

B. $y = 3x^2$

C. $y = -3x^2$

D. $y = -\frac{1}{3}x^2$

Directions: Answer the following question(s).

57 **Which of these functions has a maximum of 6?**

A. $g(x) = -x^2 - 4x - 10$

B. $g(x) = -x^2 - 4x + 2$

C. $g(x) = -x^2 - 12x - 38$

D. $g(x) = -x^2 + 12x - 38$

58 **Which of these functions has a minimum of –10?**

A. $f(x) = x^2 + 2x - 9$

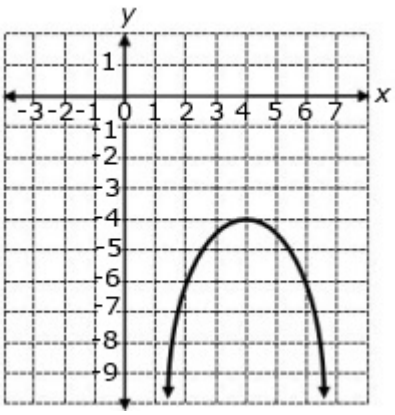
B. $f(x) = x^2 + 2x + 11$

C. $f(x) = x^2 - 20x + 99$

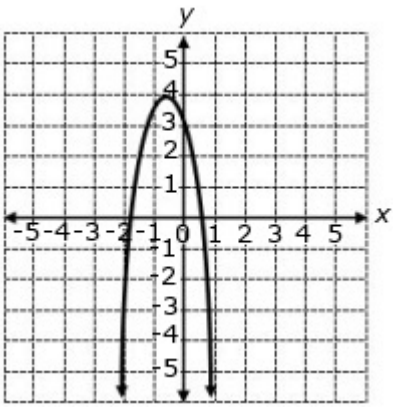
D. $f(x) = x^2 + 20x + 99$

59 **Which *best* represents the graph of $y = -\frac{1}{2}x^2 + 4$?**

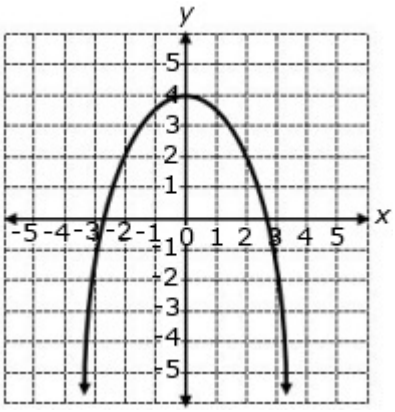
A.



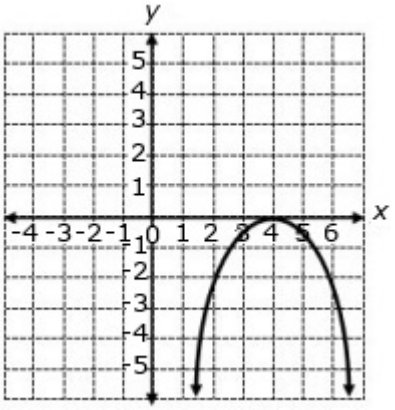
C.



B.



D.



Directions: Answer the following question(s).

60 **What quantity should be added to both sides of this equation to complete the square?**

$x^2 + 7x = -3$

A. $\frac{7}{2}$

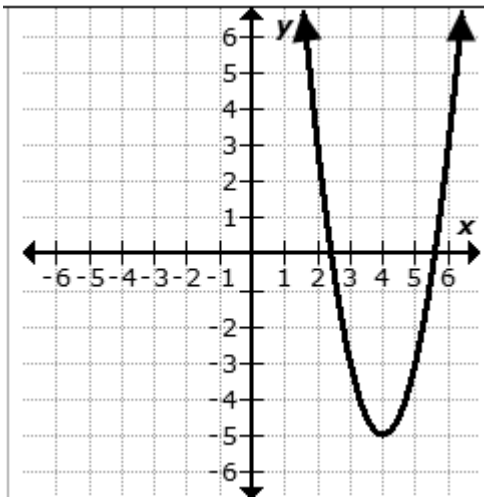
B. $\frac{49}{4}$

C. 49

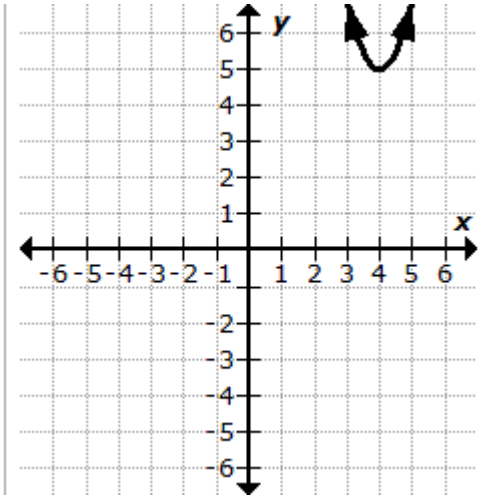
D. 196

61 **Which is the graph of $y = 2(x + 4)^2 + 5$?**

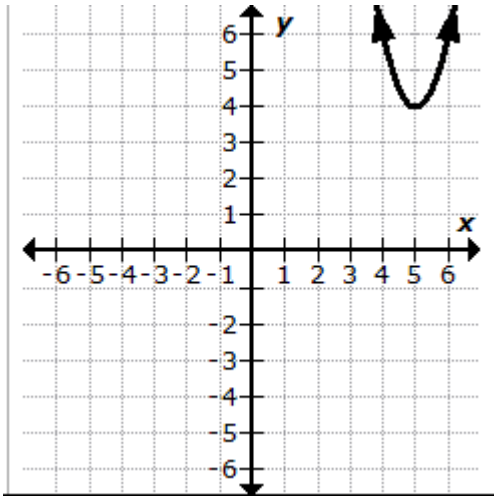
A.



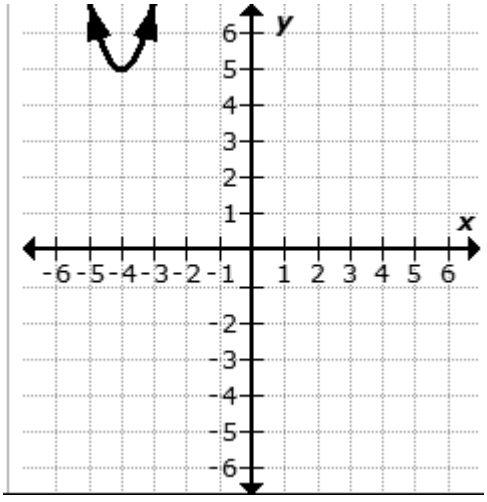
C.



B.



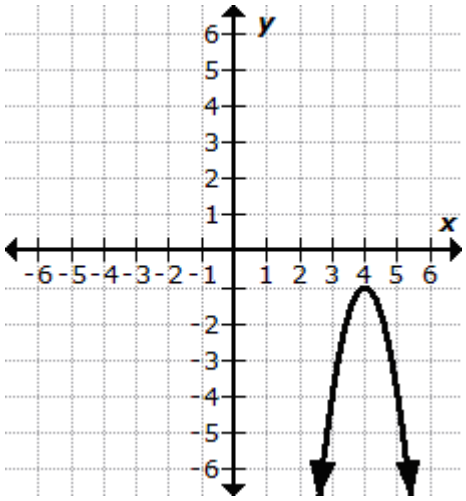
D.



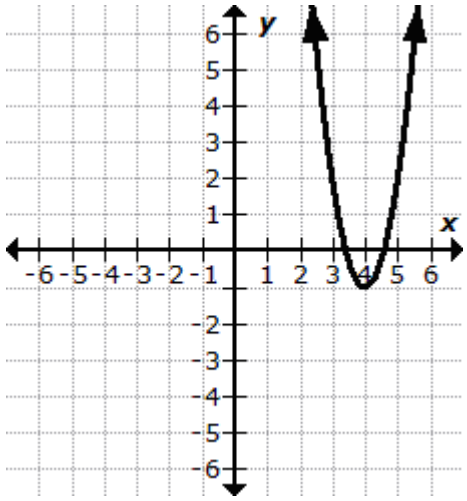
Directions: Answer the following question(s).

62 **Which is the graph of $y = -3(x - 4)^2 - 1$?**

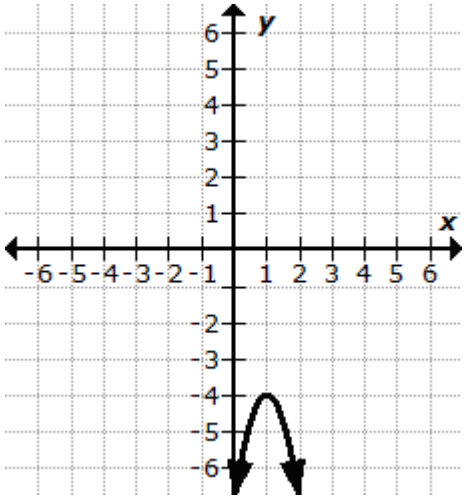
A.



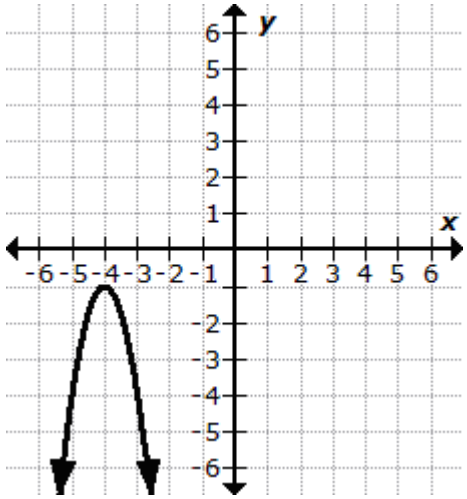
C.



B.

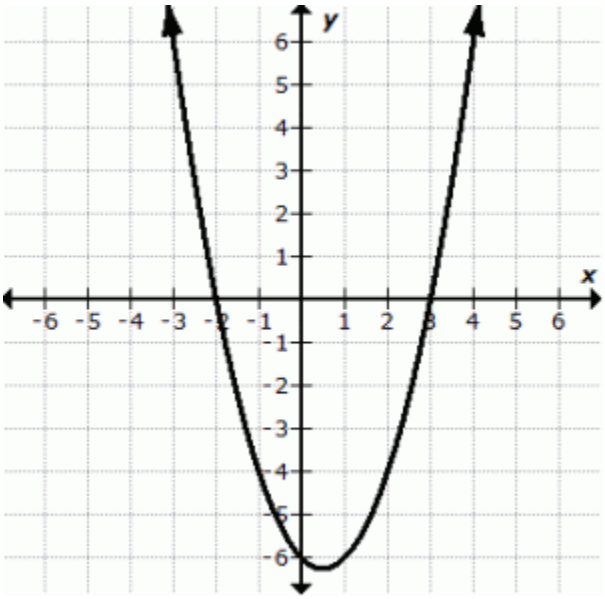


D.



Directions: Answer the following question(s).

63 **The graph of the equation $y = x^2 - x - 6$ is shown below.**



For what value or values of x is $y = 0$?

A. $x = -6$ only
B. $x = -2$ only
C. $x = -2$ and $x = 3$
D. $x = 2$ and $x = -3$

64 **Jermaine is studying a quadratic function: he finds the function has only one root, –4.**

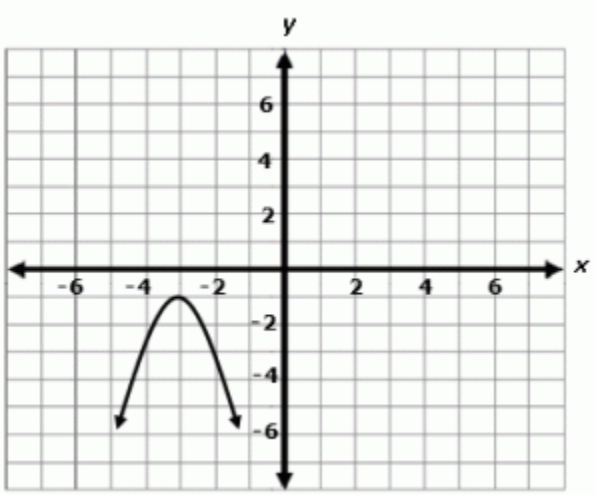
Which statements below *must* be true about the graph of Jermaine's function?

I	His parabola must open down.
II	The vertex of his parabola must be (–4, 0).
III	The x–intercept of his parabola must be (–4, 0).
IV	The axis of symmetry of his parabola must be $x = -4$.

A. I and II only
B. III and IV only
C. II, III and IV only
D. I, II, III and IV

Directions: Answer the following question(s).

65



What are the roots of the function shown above?

A. $x = -3$
B. $x = -3, y = -1$
C. $y = -8$
D. No real roots exist.

66 **If the graph of a quadratic function $f(x) = ax^2 + bx + c$ has its vertex on the x-axis, which of the following statements below is true?**

A. $b^2 - 4ac$ is negative.
B. $b^2 - 4ac$ is equal to zero.
C. $b^2 - 4ac$ is positive.
D. $b^2 - 4ac$ is undefined.

67 **If the line $x = 3$ is the axis of symmetry of a parabola, which coordinates below could be x–intercepts of the parabola?**

A. (–1 , 0) and (7 , 0)
B. (–1 , 0) and (5 , 0)
C. (–3 , 0) and (3 , 0)
D. (–8 , 0) and (–2 , 0)

68 **Find the coordinates of the vertex for the graph of $f(x) = -x^2 + 2x + 3$.**

A. (–1 , 0)
B. (1 , 4)
C. (1 , 6)
D. (2 , 3)

Directions: Answer the following question(s).

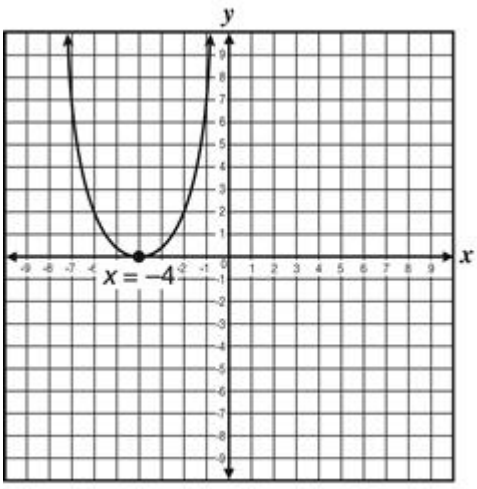
69 **Complete the statement below:**

The graph of a quadratic equation can intersect the *x*-axis _____ times.

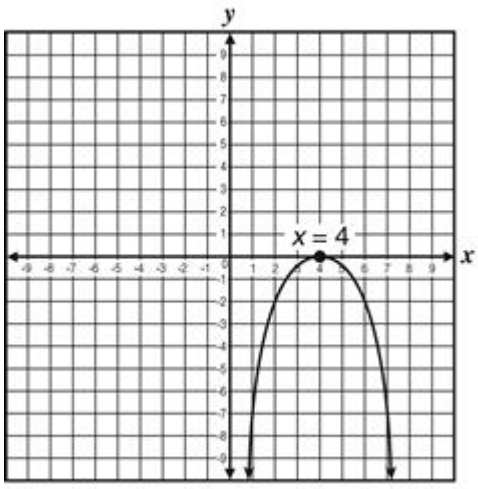
A. exactly 0, 1, or 2
B. exactly 0, 1, 2, or 3
C. exactly 0 or 1
D. exactly 1 or 2

70 **Which graph shows the solution for $y = 4 - x^2$ when $y = 0$?**

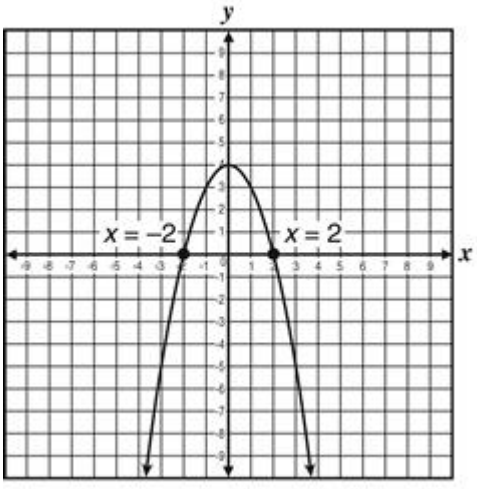
A.



C.



B.



D.