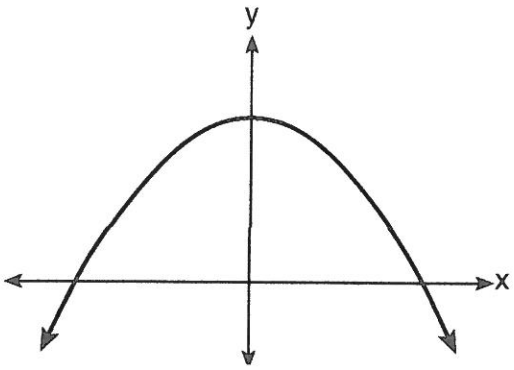
UNIT 9 TEST

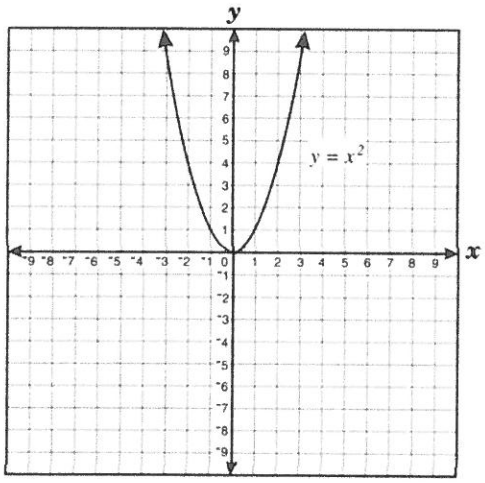
Name: _____ **Date:** _____

1. Which equation is best represented by the accompanying graph?



A. $y = 6^x$ B. $y = 6x^2$ C. $y = 6x + 1$ D. $y = -x^2 + 1$

2. The following is the graph of the equation $y = x^2$, in which y is a function of x.



Which of these describes the *range* of the function?

A. x is all real numbers B. y is all real numbers C. $y \geq 0$ D. $x \geq 0$

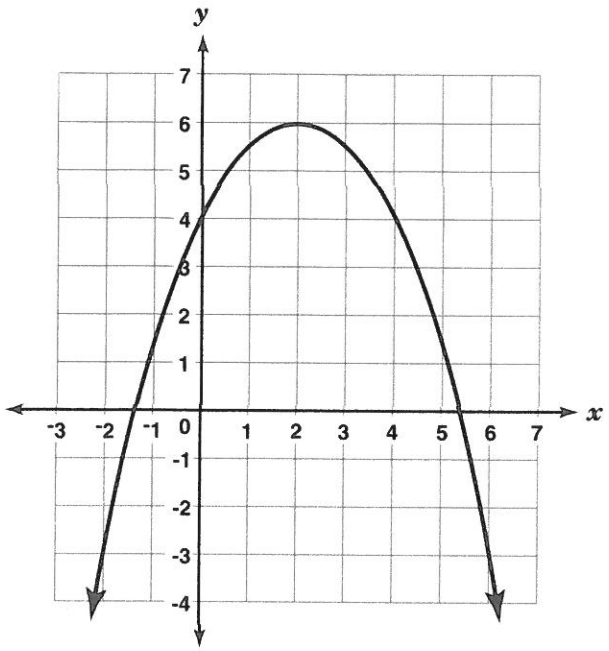
3. Which is an equation of the axis of symmetry of the parabola whose equation is $y = 3x^2 - 12x - 13$?

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

4. Which ordered pair is the vertex of $f(x) = x^2 + 6x + 5$?

A. $(-3, -4)$ B. $(-2, -3)$ C. $(-1, 0)$ D. $(0, -5)$

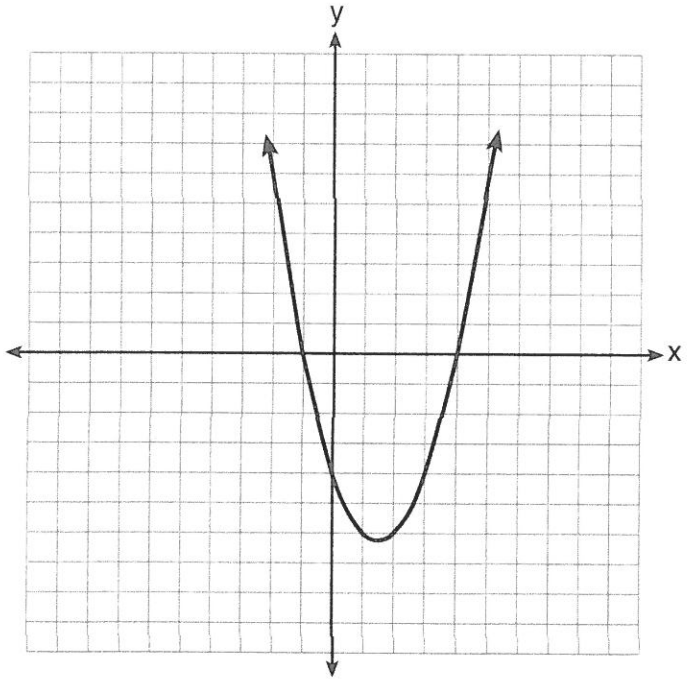
5. Look at the graph below.



Which of these terms describes the *y*-coordinate of the point (2, 6)?

A. zero B. intercept C. minimum D. maximum

6. The roots of a quadratic equation can be found using the graph below.



What are the roots of this equation?

A. −4, only B. −4 and −1 C. −1 and 4 D. −4, −1, and 4

7. What is the y-intercept of the graph of the equation $y = 2x^2 - 5x + 7$?

A. -5 B. 2 C. 7 D. -7

8. Which is true of the graph of the parabola whose equation is $y = x^2 - 2x - 8$?

A. The x-intercepts are at $x = 2$ and $x = -4$.

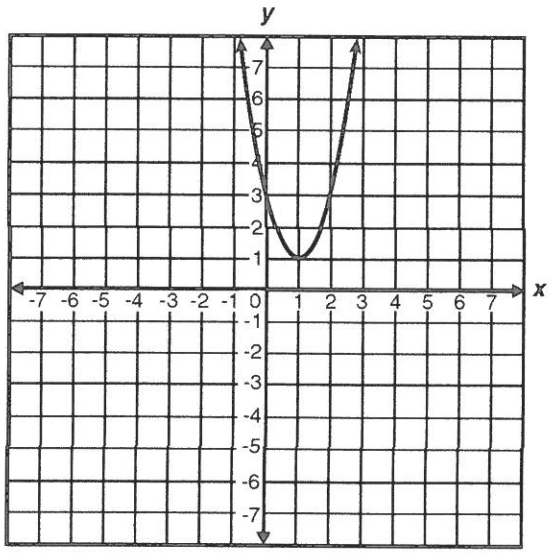
B. The only x-intercept is at $x = 4$.

C. The x-intercepts are at $x = 4$ and $x = -2$.

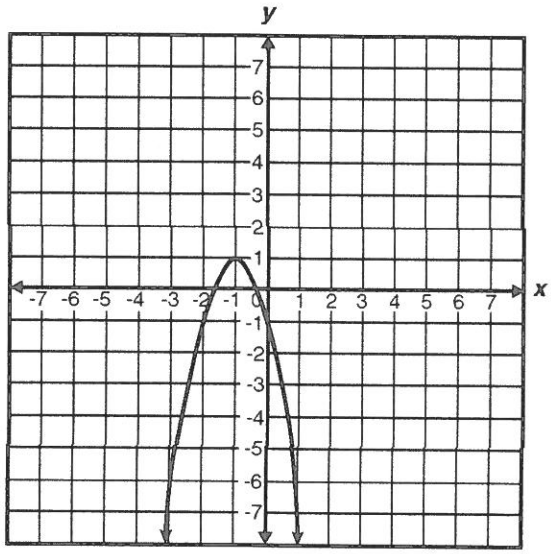
D. There are no x-intercepts.

9. Which is the graph of $y = -2(x - 1)^2 + 1$?

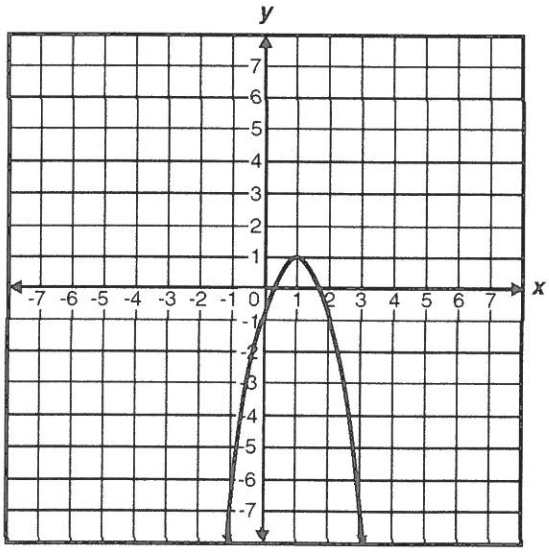
A.



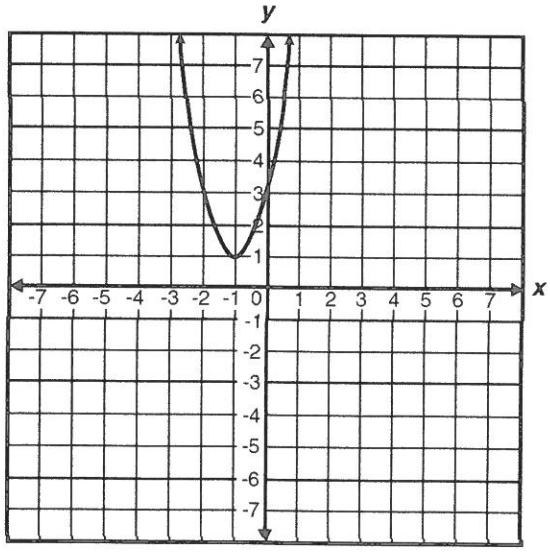
B.



C.



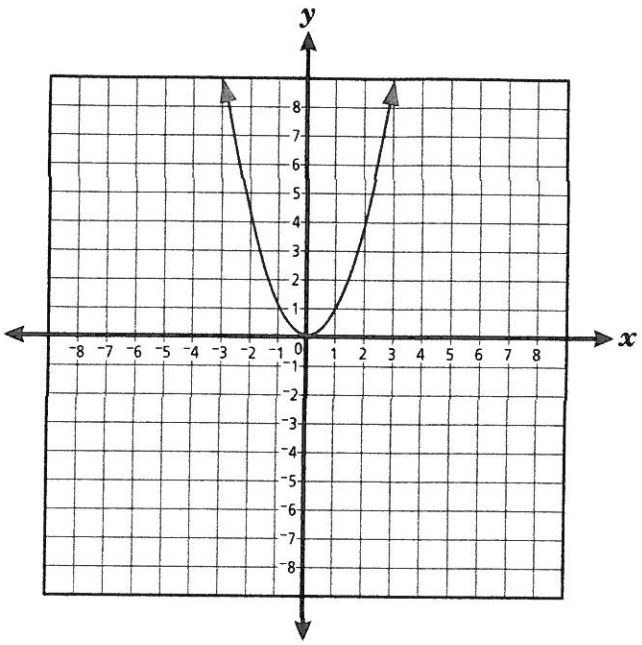
D.



10. What is the vertex of the quadratic function $y = -(x - 3)^2 + 4$?

A. (5, 0) B. (0, −5) C. (3, 4) D. (−3, 4)

11. Study the graph of $y = x^2$, shown below.

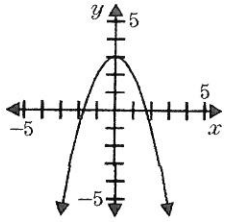


If the graph is moved up 3 units, what equation will it represent?

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

12. What is an equation of the function shown in the accompanying diagram?

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

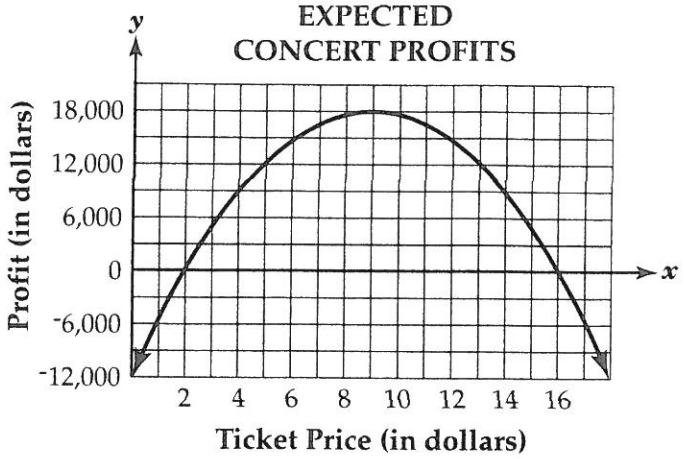


13. When $f(x) = x^2 - 4x + 7$ is written in the form $f(x) = (x - 2)^2 + 3$, which properties of the graph are revealed?

A. Vertex, Maximum B. Vertex, Minimum

C. Zeros, maximum D. Zeros, minimum

14. The graph below models the relationship between the ticket price for a concert and the expected profits.



Which of these *best* describes the zero(s) of this function?

A. 9 is the zero, and indicates when profit is at the maximum

B. −12,000 is the zero, and indicates the cost to put on the concert

C. 2 and 16 are the zeros, and indicate the ticket price for which the profit is 0

D. 2 and 16 are the zeros, and indicate the number of tickets sold for which the profit is 0

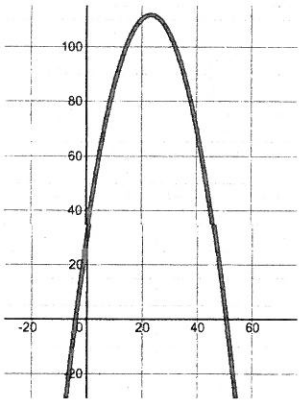
15. A company has developed a new app. After considering costs and demand for the app, the company has determined that the profit function is $p(x) = -0.15x^2 + 7x + 30$ where x is the number of apps sold.
What is the **domain** of the profit function?

A. all integers

B. all rational numbers

C. all integers greater than or equal to 0

D. all rational numbers greater than or equal to 0



END OF MULTIPLE CHOICE SECTION

16. What are the characteristics of the graph of $f(x) = -3(x + 2)^2 - 7$? Select **ALL** statements that are true.

_____ The vertex is $(-2, -7)$

_____ The vertex is $(2, -7)$

_____ The parabola would open **down**.

_____ The parabola would open **up**.

_____ The maximum value is -7

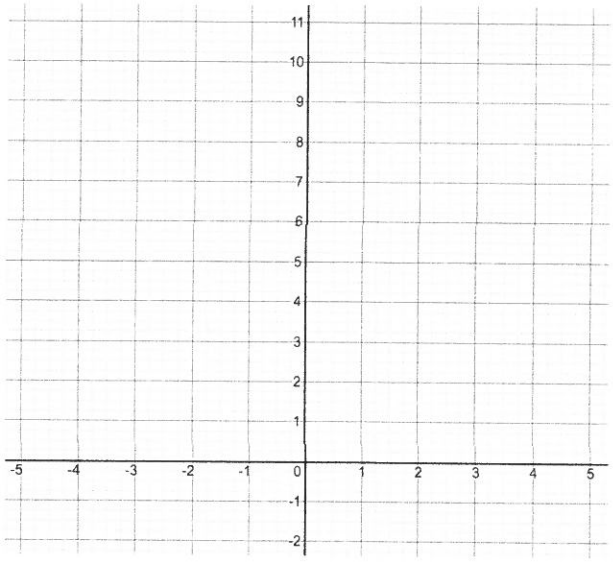
_____ The minimum value is -7

_____ The value of *a* tells that the parabola would be wide.

_____ The value of *a* tells that the parabola would be narrow

17. Write $x^2 + 8x + 11$ in vertex form by completing the square.
Show all steps!

18. Graph the function $f(x) = 2(x - 2)^2 + 1$



19. Describe, in words, the transformations of the parent function $f(x) = x^2$ for each of the following:

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

b) $f(x) = -\frac{1}{2}(x + 7)^2 - 1$