NAME _____ DATE _____ PERIOD _____

6-1 Practice

Graphing Quadratic Functions

Complete parts a–c for each quadratic function.

a. Find the y-intercept, the equation of the axis of symmetry, and the x-coordinate of the vertex.

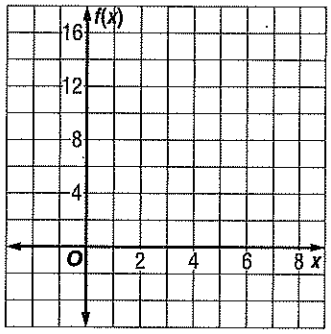
b. Make a table of values that includes the vertex.

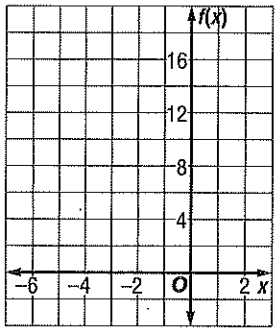
c. Use this information to graph the function.

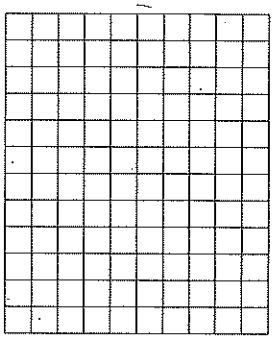
1. $f(x) = x^2 - 8x + 15$

2. $f(x) = -x^2 - 4x + 12$

3. $f(x) = 2x^2 - 2x + 1$







Determine whether each function has a maximum or a minimum value. Then find the maximum or minimum value of each function.

4. $f(x) = x^2 + 2x - 8$

5. $f(x) = x^2 - 6x + 14$

6. $v(x) = -x^2 + 14x - 57$

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

8. $f(x) = -x^2 + 4x - 1$

9. $f(x) = -\frac{2}{3}x^2 + 8x - 24$

10. GRAVITATION From 4 feet above a swimming pool, Susan throws a ball upward with a velocity of 32 feet per second. The height $h(t)$ of the ball t seconds after Susan throws it is given by $h(t) = -16t^2 + 32t + 4$. Find the maximum height reached by the ball and the time that this height is reached.

11. HEALTH CLUBS Last year, the SportsTime Athletic Club charged \$20 to participate in an aerobics class. Seventy people attended the classes. The club wants to increase the class price this year. They expect to lose one customer for each \$1 increase in the price.

a. What price should the club charge to maximize the income from the aerobics classes?

b. What is the maximum income the SportsTime Athletic Club can expect to make?

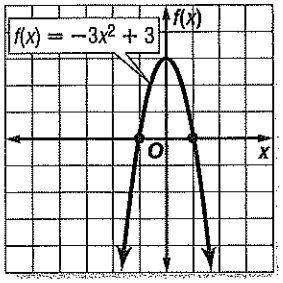
NAME _____ DATE _____ PERIOD _____

6-2 Practice

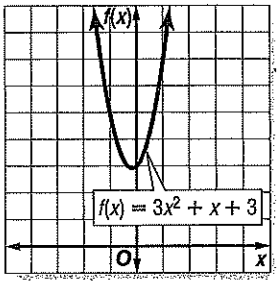
Solving Quadratic Equations By Graphing

Use the related graph of each equation to determine its solutions.

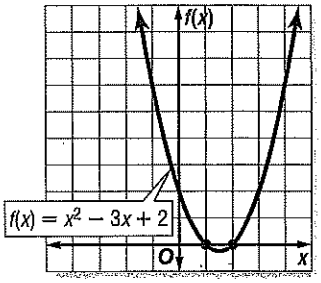
1. $-3x^2 + 3 = 0$



2. $3x^2 + x + 3 = 0$

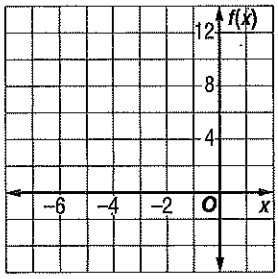


3. $x^2 - 3x + 2 = 0$

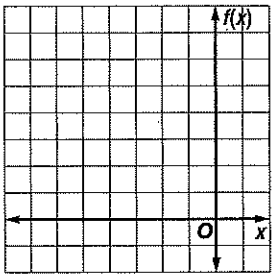


Solve each equation by graphing. If exact roots cannot be found, state the consecutive integers between which the roots are located.

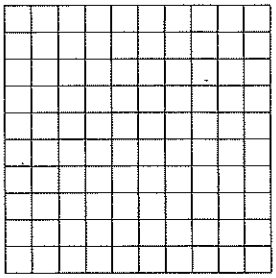
4. $-2x^2 - 6x + 5 = 0$



5. $x^2 + 10x + 24 = 0$

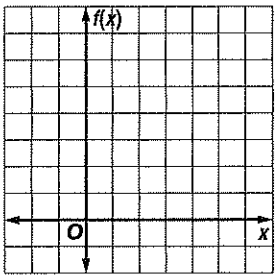


6. $2x^2 - x - 6 = 0$

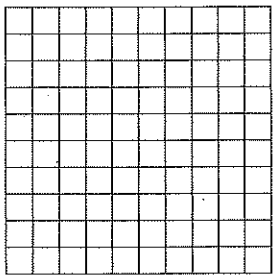


Use a quadratic equation to find two real numbers that satisfy each situation, or show that no such numbers exist.

7. Their sum is 1, and their product is −6.



8. Their sum is 5, and their product is 8.



For Exercises 9 and 10, use the formula $h(t) = v_0t - 16t^2$, where $h(t)$ is the height of an object in feet, v_0 is the object's initial velocity in feet per second, and t is the time in seconds.

9. BASEBALL Marta throws a baseball with an initial upward velocity of 60 feet per second. Ignoring Marta's height, how long after she releases the ball will it hit the ground?

10. VOLCANOES A volcanic eruption blasts a boulder upward with an initial velocity of 240 feet per second. How long will it take the boulder to hit the ground if it lands at the same elevation from which it was ejected?

NAME _____ DATE _____ PERIOD _____

6-3 Practice

Solving Quadratic Equations by Factoring

Solve each equation by factoring.

1. $x^2 - 4x - 12 = 0$

3. $x^2 - 20x + 100 = 0$

7. $x^2 - 4x = 0$

9. $x^2 + 25 = 10x$

11. $x^2 = 2x + 99$

12. $x^2 + 12x = -36$

15. $2x^2 - 8x - 90 = 0$

16. $3x^2 + 2x - 1 = 0$

19. $15x^2 + 19x + 6 = 0$

Write a quadratic equation with the given roots. Write the equation in the form $ax^2 + bx + c = 0$, where a, b, and c are integers.

22. 7, 2

27. 3, −4

28. $1, \frac{1}{2}$

33. $-\frac{2}{3}, -\frac{4}{5}$

34. NUMBER THEORY Find two consecutive even positive integers whose product is 624.

36. GEOMETRY The length of a rectangle is 2 feet more than its width. Find the dimensions of the rectangle if its area is 63 square feet.