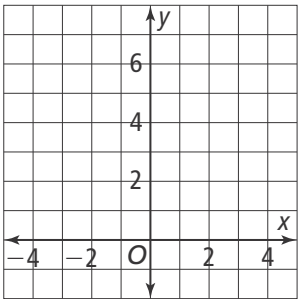
Name _____

8-3 Additional Practice

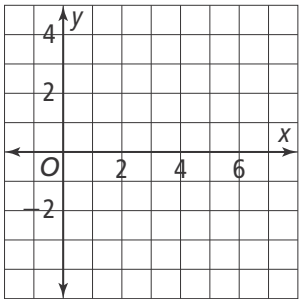
Quadratic Functions in Standard Form

Graph each function. What are the *y*-intercept, axis of symmetry, and vertex of each function? Does the vertex represent a maximum or minimum value?

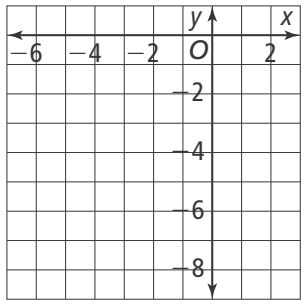
1. $f(x) = x^2 + 1$



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



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



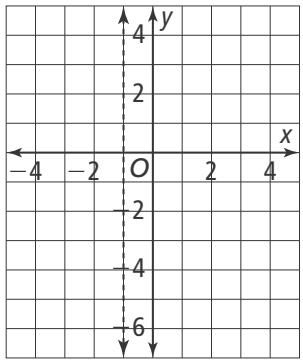
Find the axis of symmetry using the midpoint between the *x* values of the *x*-intercepts.

4. $f(x) = -9x^2 + 1$

5. $f(x) = -2x^2 + 8x - 9$

6. $f(x) = 4x^2 + 24x + 131$

7. The parabola shown has the form $y = ax^2 + bx + c$.



a. What is the axis of symmetry?

b. Use the formula $x = \frac{-b}{2a}$ to find b.

c. What is the equation of the parabola?

8. The position of a ball after it is thrown is modeled by the function $f(x) = -2(x - 1)^2 + 7$ in vertex form, where x is the height, in feet, above the ground and y is the horizontal distance, in feet, of the ball when it lands.

a. Write the function in standard form.

b. What is the height of the ball when it is thrown?

c. What is the horizontal distance from the point the ball was thrown from to the highest point that the ball reached?

Write each function in standard form.

9. $f(x) = -3(x + 1)^2 - 4$

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