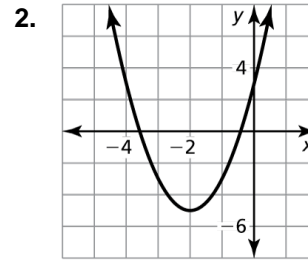
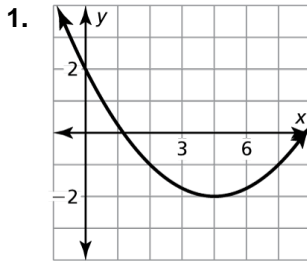


**8.3****Practice A**

In Exercises 1 and 2, find the vertex, the axis of symmetry, and the  $y$ -intercept of the graph.



In Exercises 3–6, find (a) the axis of symmetry and (b) the vertex of the graph of the function.

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

4.  $y = 5x^2 + 3x$

5.  $y = -7x^2 + 14x + 1$

6.  $f(x) = -4x^2 + 20x + 15$

In Exercises 7–10, graph the function. Describe the domain and range.

7.  $f(x) = 3x^2 - 12x + 6$

8.  $y = 5x^2 + 20x - 9$

9.  $y = -6x^2 - 12x - 5$

10.  $f(x) = -7x^2 + 28x - 8$

11. Describe and correct the error in finding the axis of symmetry of the graph of  $y = -2x^2 + 16x + 7$ .

$$\times \quad x = -\frac{b}{2a} = -\frac{16}{2(2)} = -4$$

In Exercises 12 and 13, tell whether the function has a minimum value or a maximum value. Then find the value.

12.  $f(x) = 5x^2 - 20x + 3$

13.  $y = -3x^2 + 12x - 7$

14. The vertex of a parabola is  $(2, -2)$ . Another point on the parabola is  $(5, 7)$ . Find another point on the parabola. Justify your answer.

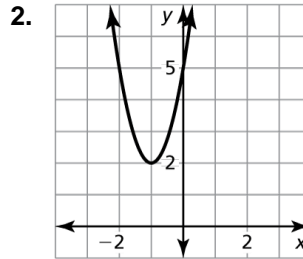
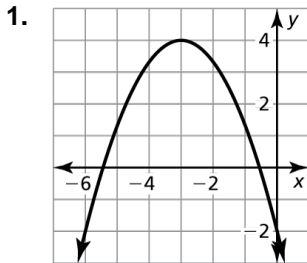
In Exercises 15 and 16, use the *minimum* or *maximum* feature of a graphing calculator to approximate the vertex of the graph of the function.

15.  $y = 0.2x^2 + \sqrt{6}x - 5$

16.  $y = -5.3x^2 + 3.6x + 2$

## 8.3 Practice B

In Exercises 1 and 2, find the vertex, the axis of symmetry, and the  $y$ -intercept of the graph.



In Exercises 3–6, find (a) the axis of symmetry and (b) the vertex of the graph of the function.

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

4.  $y = -5x^2 - 20x + 4$

5.  $y = -8x^2 + 24x + 13$

6.  $f(x) = \frac{2}{3}x^2 - 6x + 15$

In Exercises 7–10, graph the function. Describe the domain and range.

7.  $f(x) = 4x^2 + 8x + 11$

8.  $y = -6x^2 - 12x - 7$

9.  $y = \frac{1}{2}x^2 - 8x + 3$

10.  $f(x) = -\frac{2}{3}x^2 + 4x + 2$

11. Describe and correct the error in finding the vertex of the graph of  $y = x^2 + 6x + 2$ .

$$\times \quad x = -\frac{b}{2a} = -\frac{16}{2(1)} = -3$$

So, the vertex is  $(-3, 2)$ .

In Exercises 12 and 13, tell whether the function has a minimum value or a maximum value. Then find the value.

12.  $f(x) = -6x^2 + 24x - 5$

13.  $y = \frac{1}{3}x^2 + 8x - 1$

In Exercises 14 and 15, use the *minimum* or *maximum* feature of a graphing calculator to approximate the vertex of the graph of the function.

14.  $y = -2.1x^2 + \pi x + 3$

15.  $y = 1.25x^2 - 2^{3/4}x + 3$