9-1 Exercises

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GUIDED PRACTICE

1. **Vocabulary** The y-value of the vertex of a parabola that opens upward is the ___?___ value of the function. (*maximum* or *minimum*)

SEE EXAMPLE 1 p. 590

Tell whether each function is quadratic. Explain.

2. $y + 6x = -14$
3. $2x^2 + y = 3x - 1$
4.

x	−4	−3	−2	−1	0
y	39	18	3	−6	−9

5. $\{(-10, 15), (-9, 17), (-8, 19), (-7, 21), (-6, 23)\}$

SEE EXAMPLE 2 p. 591

Use a table of values to graph each quadratic function.

6. $y = 4x^2$
7. $y = \frac{1}{2}x^2$
8. $y = -x^2 + 1$
9. $y = -5x^2$

SEE EXAMPLE 3 p. 592

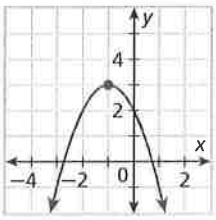
Tell whether the graph of each quadratic function opens upward or downward. Explain.

10. $y = -3x^2 + 4x$
11. $y = 1 - 2x + 6x^2$
12. $y + x^2 = -x - 2$
13. $y + 2 = x^2$
14. $y - 2x^2 = -3$
15. $y + 2 + 3x^2 = 1$

SEE EXAMPLE 4 p. 592

Identify the vertex of each parabola. Then give the minimum or maximum value of the function.

16.



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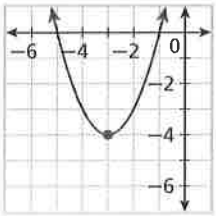
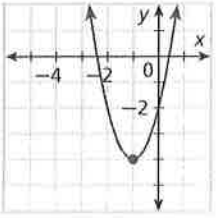


SEE EXAMPLE 5 p. 593

Find the domain and range.

18.



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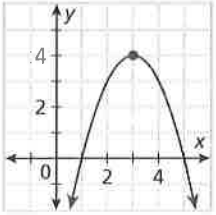

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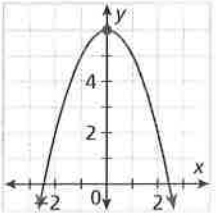

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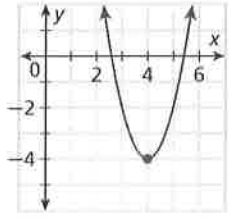


PRACTICE AND PROBLEM SOLVING

Independent Practice

For Exercises	See Example
22–25	1
26–29	2
30–32	3
33–34	4
35–38	5

Extra Practice

Skills Practice p. S20

Application Practice p. S36

Tell whether each function is quadratic. Explain.

22.

x	−2	−1	0	1	2
y	−1	0	4	9	15

23. $-3x^2 + x = y - 11$

24. $\{(0, -3), (1, -2), (2, 1), (3, 6), (4, 13)\}$

25. $y = \frac{2}{3}x - \frac{4}{9} + \frac{1}{6}x^2$

Use a table of values to graph each quadratic function.

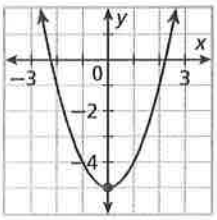
26. $y = x^2 - 5$ **27.** $y = -\frac{1}{2}x^2$ **28.** $y = -2x^2 + 2$ **29.** $y = 3x^2 - 2$

Tell whether the graph of each quadratic function opens upward or downward. Explain.

30. $y = 7x^2 - 4x$ **31.** $x - 3x^2 + y = 5$ **32.** $y = -\frac{2}{3}x^2$

Identify the vertex of each parabola. Then give the minimum or maximum value of the function.

33.



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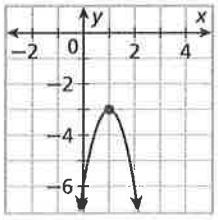
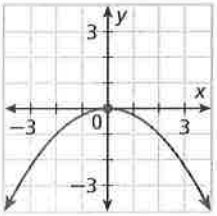


Find the domain and range.

35.



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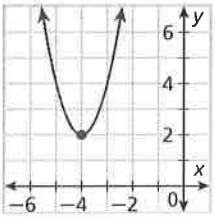

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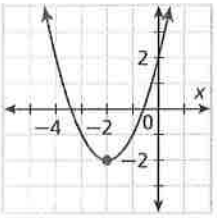

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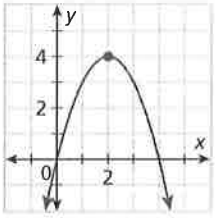

Tell whether each statement is sometimes, always, or never true.

39. The graph of a quadratic function is a straight line.

40. The range of a quadratic function is the set of all real numbers.

41. The highest power in a quadratic function is 2.

42. The graph of a quadratic function contains the point $(0, 0)$.

43. The vertex of a parabola occurs at the minimum value of the function.

44. The graph of a quadratic function that has a minimum opens upward.