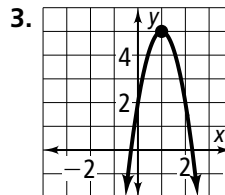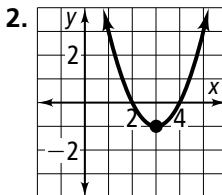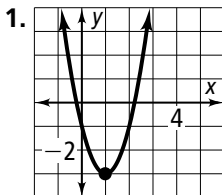# Practice: Section 3-1 WS   /27   *Form G*

Quadratic Graphs and Their Properties

Identify the vertex of each graph. Tell whether it is a minimum or a maximum.

1.

2.

3.

Graph each function.

4. $f(x) = 3x^2$ **5.** $f(x) = -2.5x^2$ **6.** $f(x) = -\frac{1}{5}x^2$

Order each group of quadratic functions from widest to narrowest graph.

7. $y = -3x^2, y = -5x^2, y = -1x^2$ **8.** $y = 4x^2, y = -2x^2, y = -6x^2$

9. $y = x^2, y = \frac{1}{3}x^2, y = 2x^2$ **10.** $y = \frac{1}{6}x^2, y = \frac{1}{4}x^2, y = \frac{1}{2}x^2$

Graph each function.

11. $f(x) = x^2 + 1$ **12.** $f(x) = x^2 - 2$ **13.** $f(x) = 2x^2 + 1$

14. $f(x) = -\frac{1}{2}x^2 + 5$ **15.** $f(x) = -3x^2 - 4$ **16.** $f(x) = 5x^2 - 10$

Practice (continued)   *Form G*

Quadratic Graphs and Their Properties

17. For a physics experiment, the class drops a golf ball off a bridge toward the pavement below. The bridge is 75 feet high. The function $h = -16t^2 + 75$ gives the golf ball's height h above the pavement (in feet) after t seconds. Graph the function. How many seconds does it take for the golf ball to hit the pavement?

18. A relief organization flew over a village and dropped a package of food and medicine. The plane is flying at 1000 feet. The function $h = -16t^2 + 1000$ gives the package's height h above the ground (in feet) after t seconds. Graph the function. How many seconds does it take for the package to hit the ground?

Identify the domain and range of each function.

19. $y = 5x^2 - 5$ **20.** $y = -\frac{1}{2}x^2 + 3$

21. $y = \frac{3}{5}x^2 - 2$ **22.** $f(x) = -9x^2 + 1$

Use a graphing calculator to graph each function. Identify the vertex and axis of symmetry.

23. $y = 2.75x^2 + 3$ **24.** $y = -\frac{1}{3}x^2 - 8$ **25.** $y = -2x^2 + 7$

26. Writing Discuss how the function $y = x^2 + 4$ differs from the graph $y = x^2$.

27. Writing Explain how you can determine if the parabola opens up or down by simply examining the equation.