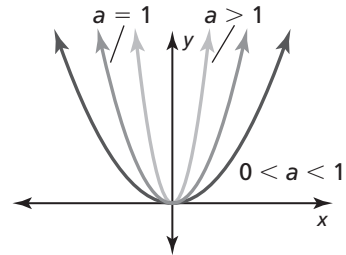


**8.1 Notetaking with Vocabulary (continued)**

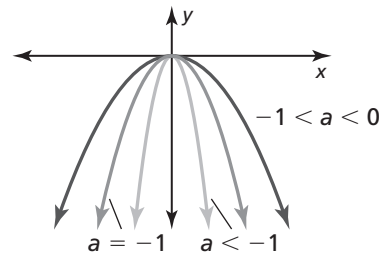
**Graphing  $f(x) = ax^2$  When  $a > 0$**

- When  $0 < a < 1$ , the graph of  $f(x) = ax^2$  is a vertical shrink of the graph of  $f(x) = x^2$ .
- When  $a > 1$ , the graph of  $f(x) = ax^2$  is a vertical stretch of the graph of  $f(x) = x^2$ .



**Graphing  $f(x) = ax^2$  When  $a < 0$**

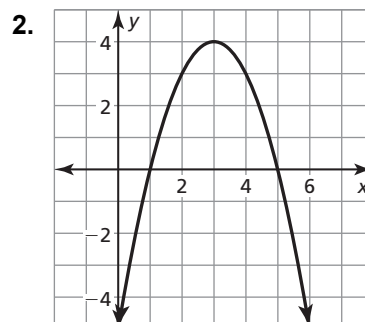
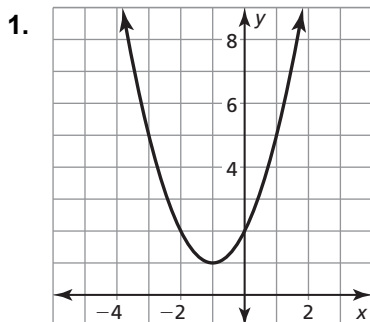
- When  $-1 < a < 0$ , the graph of  $f(x) = ax^2$  is a vertical shrink with a reflection in the  $x$ -axis of the graph of  $f(x) = x^2$ .
- When  $a < -1$ , the graph of  $f(x) = ax^2$  is a vertical stretch with a reflection in the  $x$ -axis of the graph of  $f(x) = x^2$ .



**Notes:**

**Extra Practice**

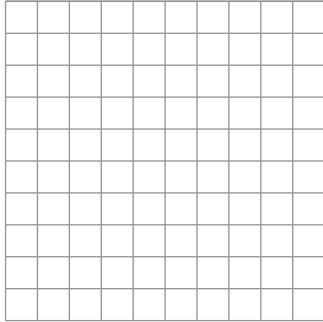
In Exercises 1 and 2, identify characteristics of the quadratic function and its graph.



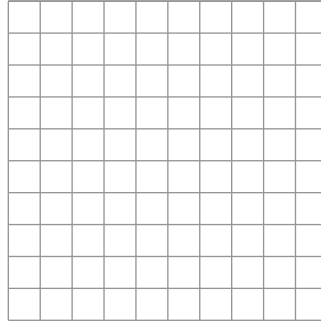
**8.1** Notetaking with Vocabulary (continued)

In Exercises 3–8, graph the function. Compare the graph to the graph of  $f(x) = x^2$ .

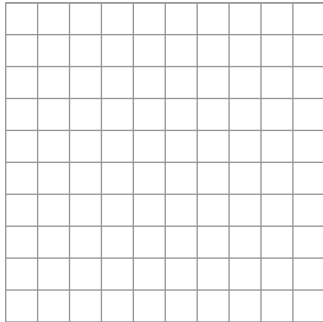
3.  $g(x) = 5x^2$



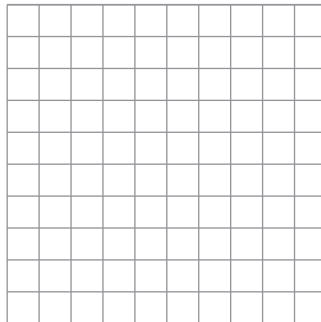
4.  $m(x) = -4x^2$



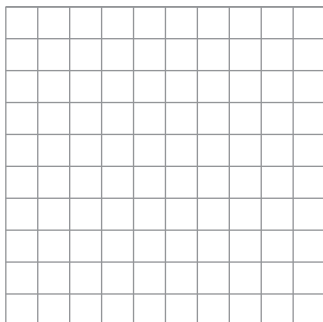
5.  $k(x) = -x^2$



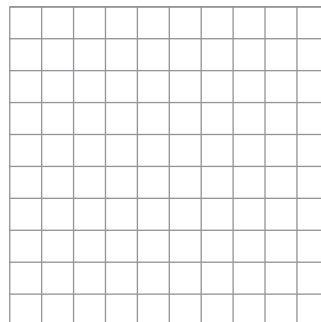
6.  $l(x) = -7x^2$



7.  $n(x) = -\frac{1}{5}x^2$



8.  $p(x) = 0.6x^2$



In Exercises 9 and 10, determine whether the statement is *always*, *sometimes*, or *never* true. Explain your reasoning.

9. The graph of  $g(x) = ax^2$  is wider than the graph of  $f(x) = x^2$  when  $a > 0$ .

10. The graph of  $g(x) = ax^2$  is narrower than the graph of  $f(x) = x^2$  when  $|a| < 1$ .