

**8.1****Practice A**

In Exercises 1–6, graph the function. Compare the graph to the graph of  $f(x) = x^2$ .

1.  $g(x) = 4x^2$

2.  $h(x) = 1.5x^2$

3.  $j(x) = \frac{1}{3}x^2$

4.  $g(x) = -3x^2$

5.  $k(x) = -\frac{5}{2}x^2$

6.  $n(x) = -0.5x^2$

In Exercises 7–9, use a graphing calculator to graph the function. Compare the graph to the graph of  $y = -5x^2$ .

7.  $y = 5x^2$

8.  $y = -0.5x^2$

9.  $y = -0.05x^2$

10. The arch support of a bridge can be modeled by  $y = -0.00125x^2$ , where  $x$  and  $y$  are measured in feet.

a. The width of the arch is 800 feet. Describe the domain of the function. Explain.

b. Use a graphing calculator to graph the function, using the domain in part (a). Find the height of the arch.

11. Is the  $y$ -intercept of the graph of  $y = ax^2$  always 0? Explain.

In Exercises 12–15, determine whether the statement is *always*, *sometimes*, or *never* true. Explain your reasoning.

12. The graph of  $f(x) = ax^2$  is narrower than the graph of  $g(x) = dx^2$  when  $d = -a$ .

13. The graph of  $f(x) = ax^2$  opens in the same direction as the graph of  $g(x) = dx^2$  when  $d = |a|$ .

14. The graph of  $f(x) = ax^2$  opens in the same direction as the graph of  $g(x) = dx^2$  when  $g(x) = f(-x)$ .

15. The graph of  $f(x) = ax^2$  opens in the same direction as the graph of  $g(x) = dx^2$  when  $g(x) = -f(x)$ .

# 8.1 Practice B

In Exercises 1–6, graph the function. Compare the graph to the graph of  $f(x) = x^2$ .

1.  $g(x) = 7x^2$

2.  $h(x) = 0.25x^2$

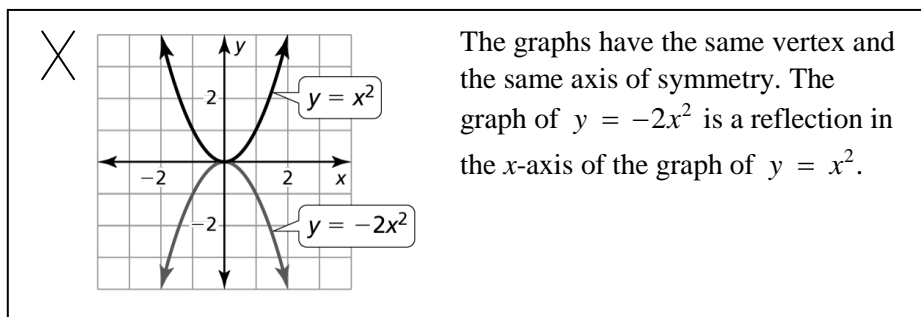
3.  $j(x) = \frac{7}{2}x^2$

4.  $g(x) = -\frac{5}{3}x^2$

5.  $k(x) = -\frac{3}{4}x^2$

6.  $n(x) = -0.4x^2$

7. Describe and correct the error in graphing and comparing  $y = x^2$  and  $y = -2x^2$ .



8. The arch support of a bridge can be modeled by  $y = -\frac{1}{300}x^2$ , where  $x$  and  $y$  are measured in feet.
- The width of the arch is 900 feet. Describe the domain of the function. Explain.
  - Use a graphing calculator to graph the function, using the domain in part (a). Find the height of the arch.
9. A parabola opens down and passes through the points  $(-3, 4)$  and  $(1, -2)$ . How do you know that  $(-3, 4)$  could be the vertex?
10. Given the parabola  $f(x) = ax^2$ .
- Find the value of  $a$  when the graph passes through  $(3, -1)$  and  $a < 0$ .
  - Find the value of  $a$  when the graph passes through  $(3, -1)$  and  $a > 0$ . Explain.