

# 9-1

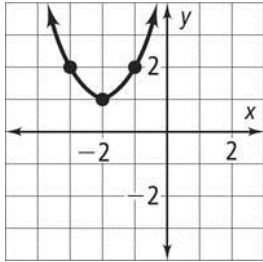
## Practice B

Form K

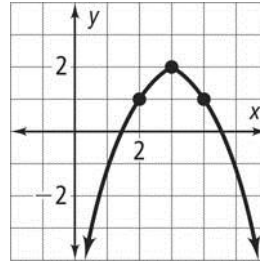
### Quadratic Graphs and Their Properties

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

1.

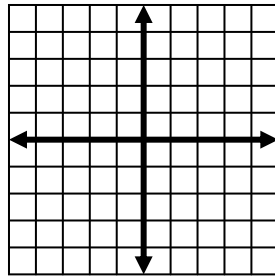


2.

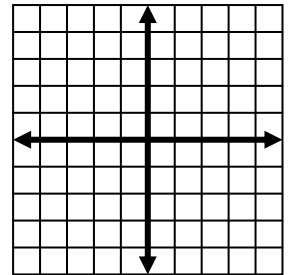


Graph each function.

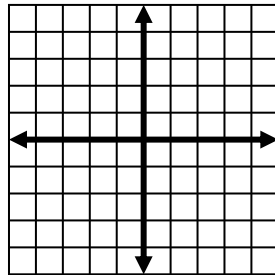
3.  $f(x) = 5x^2$



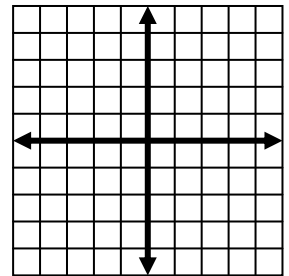
4.  $f(x) = -3x^2$



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



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



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

7.  $y = -2x^2, y = -4x^2, y = -3x^2$

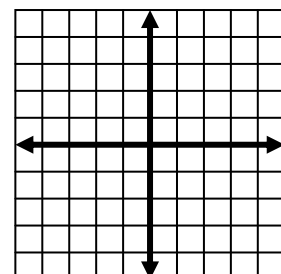
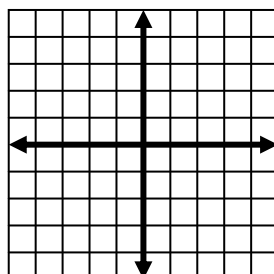
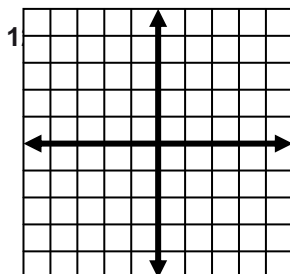
8.  $y = \frac{1}{3}x^2, y = 3x^2, y = \frac{1}{6}x^2$

Graph each function.

9.  $f(x) = x^2 + 3$

10.  $f(x) = x^2 - 5$

11.  $f(x) = -\frac{1}{3}x^2 - 1$



Jared is casting his fishing line with a lead sinker attached over the edges of a pier. The pier is 15 feet above the water. The function  $h = -16t^2 + 15$  gives the sinker's height  $h$  above the water (in feet) after  $t$  seconds. Graph the function. How many seconds does it take for the sinker to hit the water?

13. A roofer is going to drop his hammer to the ground from the roof after making sure the area is clear. The roof is 25 feet high. The function  $h = -16t^2 + 25$  gives the hammer's height  $h$  above the ground (in feet) after  $t$  seconds. Graph the function. How many seconds does it take for the hammer to hit the ground?

**Identify the domain and range of each function.**

14.  $y = 4x^2 - 3$

15.  $y = -\frac{1}{4}x^2 - 2$

16.  $y = \frac{2}{3}x^2 + 1$

17.  $f(x) = -2x^2 + 6$

18. **Writing** Discuss how the graph of  $y = x^2 - 7$  differs from the graph of  $y = x^2$ .

19. **Writing** Explain how you can determine if the parabola has been shifted up or down by examining the equation.

20. **Open-Ended** Write the equation of a quadratic function for which the graph opens in the same direction as the graph of  $y = x^2$ , is wider than the graph of  $y = x^2$ , and is shifted up compared to the graph of  $y = x^2$ .