

Name: \_\_\_\_\_ Period: \_\_\_\_\_

## 7.1 Graphing Quadratic Functions: Vertex and Axis of Symmetry

Write the form each quadratic equation is in. Find the vertex and the direction of the opening of the graph for each of the following quadratic equations. Find the y-intercept and axis of symmetry.

1.  $y = (x - 4)^2 + 3$

$a = \underline{\hspace{2cm}}$ ,  $h = \underline{\hspace{2cm}}$ ,  $k = \underline{\hspace{2cm}}$

Form: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

Direction of opening: \_\_\_\_\_

y-intercept: \_\_\_\_\_

2.  $y = -2(x + 3)^2$

$a = \underline{\hspace{2cm}}$ ,  $h = \underline{\hspace{2cm}}$ ,  $k = \underline{\hspace{2cm}}$

Form: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

Direction of opening: \_\_\_\_\_

y-intercept: \_\_\_\_\_

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

$a = \underline{\hspace{2cm}}$ ,  $b = \underline{\hspace{2cm}}$ ,  $c = \underline{\hspace{2cm}}$

Form: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

Direction of opening: \_\_\_\_\_

y-intercept: \_\_\_\_\_

4.  $f(x) = -2x^2 + 8x - 58$

$a = \underline{\hspace{2cm}}$ ,  $b = \underline{\hspace{2cm}}$ ,  $c = \underline{\hspace{2cm}}$

Form: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

Direction of opening: \_\_\_\_\_

y-intercept: \_\_\_\_\_

5.  $y = (x - 3)(x - 7)$   
 $a = \underline{\hspace{2cm}}, p = \underline{\hspace{2cm}}, q = \underline{\hspace{2cm}}$

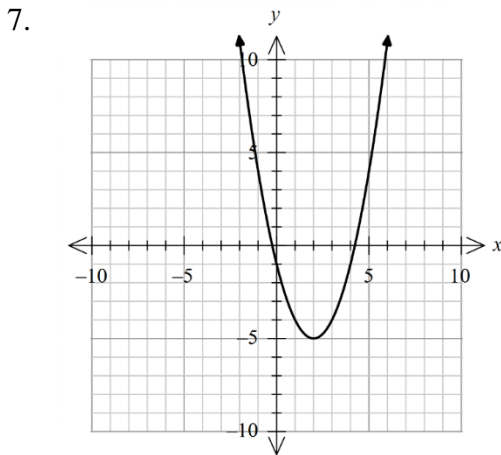
Form: \_\_\_\_\_  
 Vertex: \_\_\_\_\_  
 Axis of Symmetry: \_\_\_\_\_  
 Direction of opening: \_\_\_\_\_  
 y-intercept: \_\_\_\_\_

6.  $f(x) = \frac{1}{4}(x + 2)(x - 6)$   
 $a = \underline{\hspace{2cm}}, p = \underline{\hspace{2cm}}, q = \underline{\hspace{2cm}}$

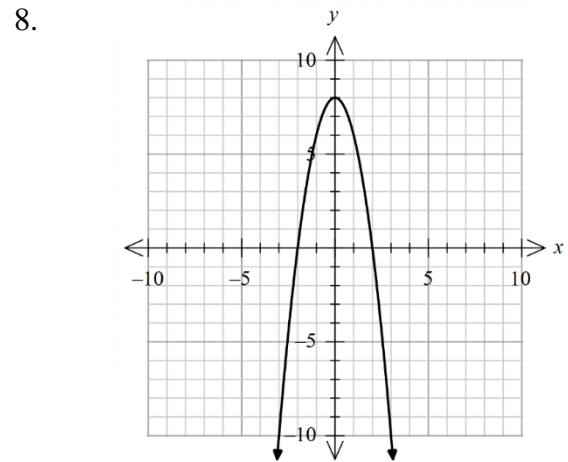
Form: \_\_\_\_\_  
 Vertex: \_\_\_\_\_  
 Axis of Symmetry: \_\_\_\_\_  
 Direction of opening: \_\_\_\_\_  
 y-intercept: \_\_\_\_\_

6a. What do the vertex and axis of symmetry always have in common?

For each of the following graphs, find the vertex, axis of symmetry, and y-intercept.

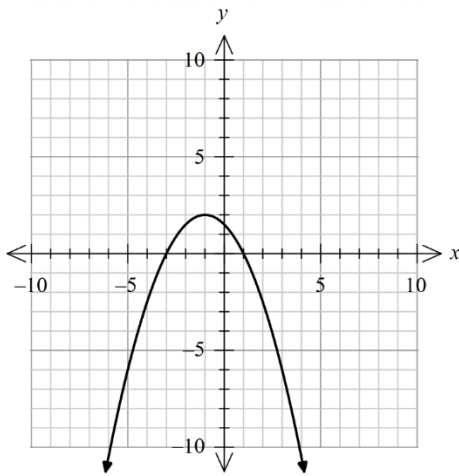


Vertex: \_\_\_\_\_  
 Axis of Symmetry: \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 is the value of "a" positive or negative? \_\_\_\_\_



Vertex: \_\_\_\_\_  
 Axis of Symmetry: \_\_\_\_\_  
 y-intercept: \_\_\_\_\_  
 is the value of "a" positive or negative? \_\_\_\_\_

9.



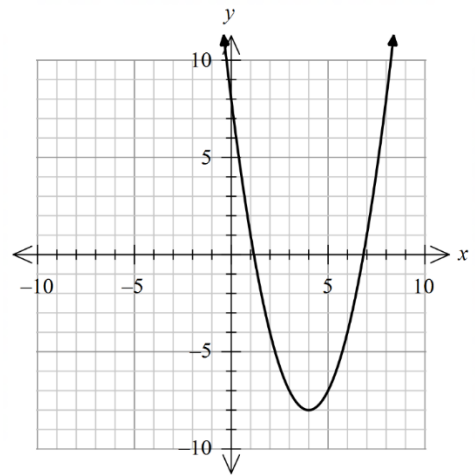
Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

y-intercept: \_\_\_\_\_

is the value of "a" positive or negative? \_\_\_\_\_

10.



Vertex: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

y-intercept: \_\_\_\_\_

is the value of "a" positive or negative? \_\_\_\_\_

**Solve.**

11.  $(x+3)(2x-5)=0$

12.  $-3(x-7)^2+45=0$

13.  $4x^2-11=3x$