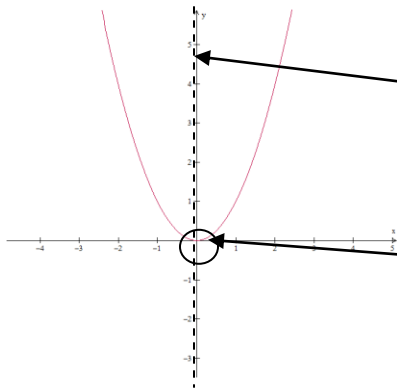


**Section 9-4 and 9-5: Graphing Parabolas**

**Graphs of Quadratic Functions**

A **quadratic function** is a function that can be described as...

Consider the following graph of  $f(x) = x^2$



This shape is called a \_\_\_\_\_.

This is considered the line [or axis] of \_\_\_\_\_  
It can be expressed as...

This point is called the \_\_\_\_\_. We can  
notate it as \_\_\_\_\_.

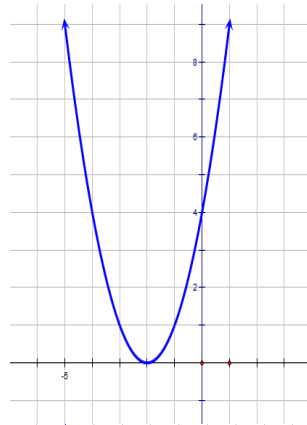
What is the domain of this function? \_\_\_\_\_  
What is the range of this function? \_\_\_\_\_

**Example #1:**

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

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

Minimum/Maximum Value: \_\_\_\_\_

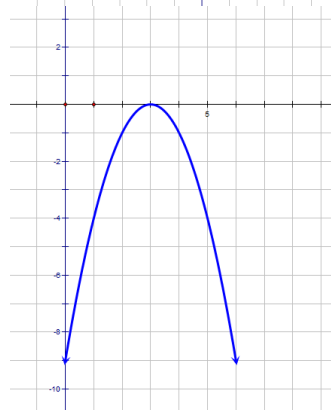


**Example #2:**

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

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

Minimum/ Maximum Value:



**Section 9-4 and 9-5: Graphing Parabolas****The Standard form for Quadratic Functions**

$$f(x) = a(x - h)^2 + k$$

We like this form of the function because we can quickly get the information below...

Vertex	
Line of Symmetry	
Opens up	
Opens down	

Examples:

1.  $f(x) = 2(x - 3)^2 + 5$

a. What is the vertex?	
b. What is the line of symmetry?	
c. Opens up or down	

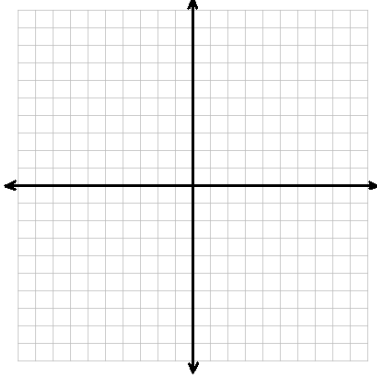
2.  $f(x) = -(x - 2)^2 + 3$

a. What is the vertex?	
b. What is the line of symmetry?	
c. Opens up or down?	

**Section 9-4 and 9-5: Graphing Parabolas**

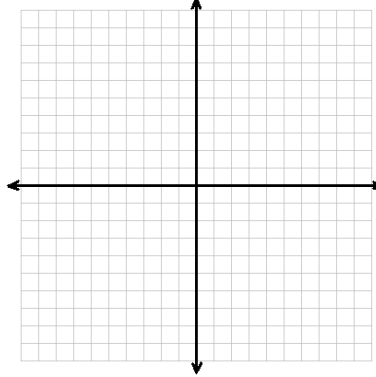
**Graph the following:**

1.  $f(x) = (x - 1)^2 + 2$



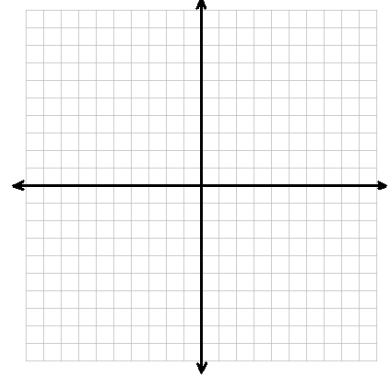
VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

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



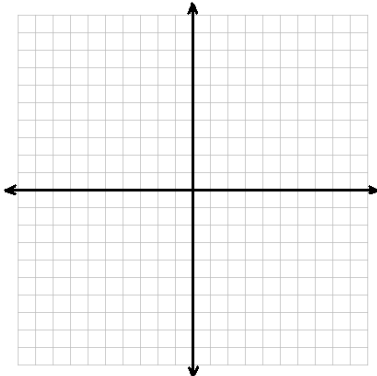
VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

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



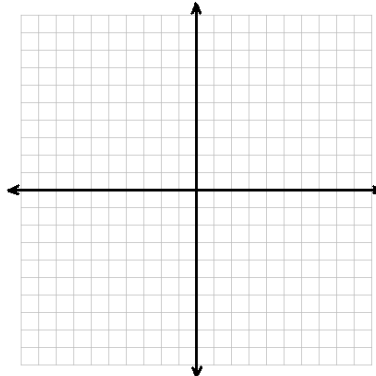
VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

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



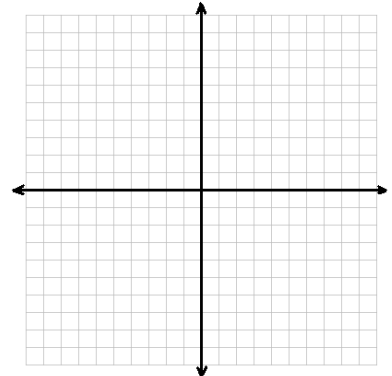
VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

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



VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

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

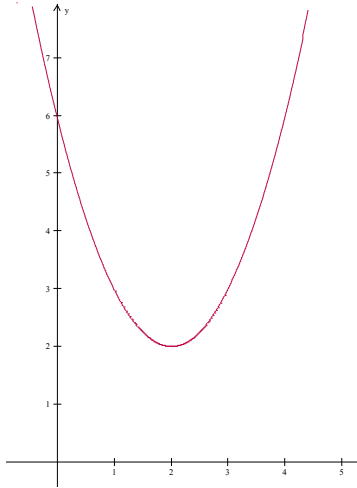


VERTEX: \_\_\_\_\_  
 AXIS of SYM: \_\_\_\_\_  
 OPENS: \_\_\_\_\_  
 Min or Max: \_\_\_\_\_

**Section 9-4 and 9-5: Graphing Parabolas**

**Finding the y-intercepts of a Quadratic Function**

➤ Below is the graph for  $f(x) = (x - 2)^2 + 2$



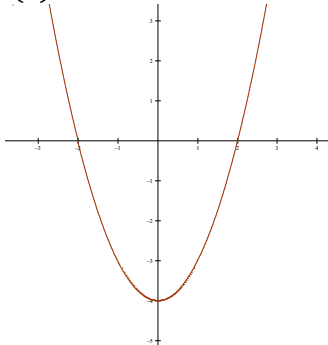
- State the Vertex: ( \_\_\_\_\_ , \_\_\_\_\_ )
- Locate and state the y-intercept: ( \_\_\_\_\_ , \_\_\_\_\_ )
- How can we find the y-intercept without using a graph? [Hint: What is the x-coordinate of the y-intercept?]

**Finding the x-intercepts of a Quadratic Function**

For the following graphs answer the following questions

- State the Vertex
- Locate and state the x-intercept(s)

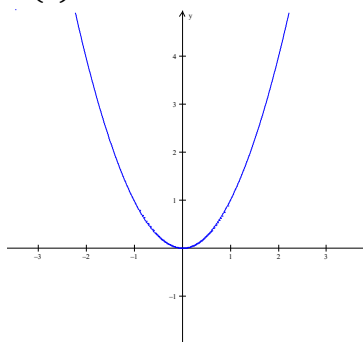
1.  $f(x) = x^2 - 4$



a) \_\_\_\_\_

b) \_\_\_\_\_

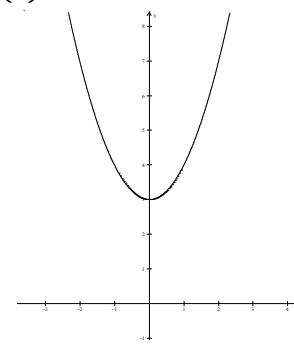
2.  $f(x) = x^2$



a) \_\_\_\_\_

b) \_\_\_\_\_

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



a) \_\_\_\_\_

b) \_\_\_\_\_

How can we find the x-intercept(s) without using a graph? [Hint: What is the y-coordinate of the x-intercept?]