Name: _____ Date: _____

Objective:

Vocabulary

Quadratic Function

Standard Form

Parabola

Vertex

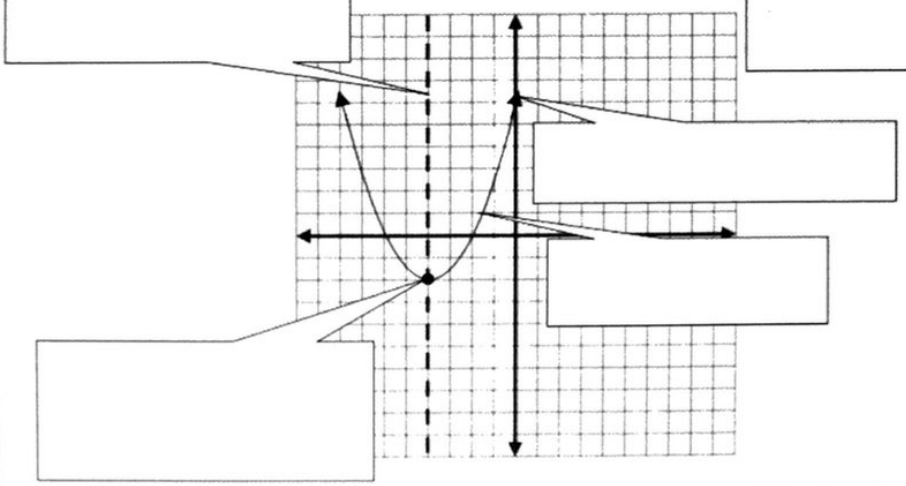
Axis of Symmetry

Minimum/Maximum

Y-intercept

$$f(x) = ax^2 + bx + c$$

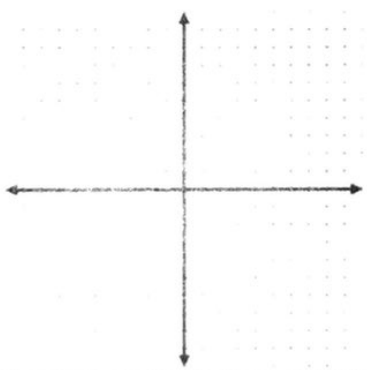
$$a \neq 0$$



Example 1: Parent Function

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

x	x^2	y
-2		
-1		
0		
1		
2		



1. What are the coordinates of the vertex? Is it a maximum or minimum value?

2. What is the equation for the axis of symmetry?

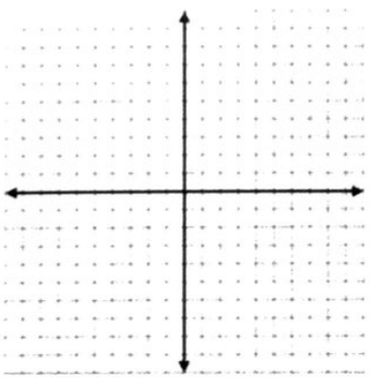
3. Where are the x and y intercepts?

4. What are the domain and range?

Example 2: Graph Using a Table

$$f(x) = x^2 + 2x - 8$$

x	$x^2 + 2x - 8$	y
-2		
-1		
0		
1		
2		



1. What are the coordinates of the vertex? Is it a maximum or minimum value?

2. What is the equation for the axis of symmetry?

3. Where are the x and y intercepts?

4. What are the domain and range?

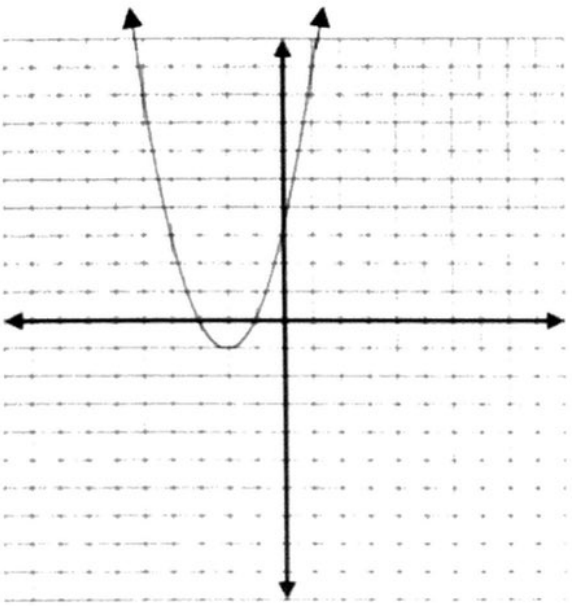
Connecting to factoring:

1. Given the graph below, identify the following characteristics:

Axis of Symmetry:_____

Vertex:_____

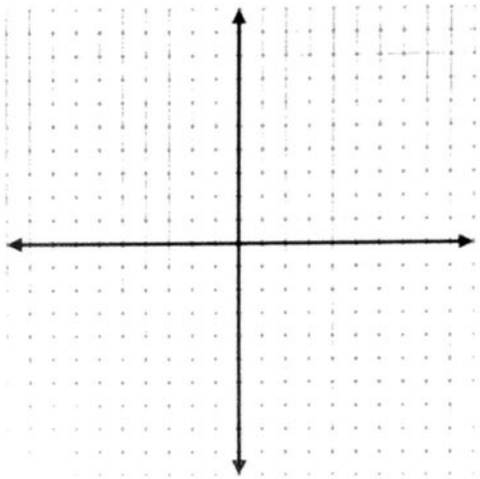
Y-Intercept:_____



2. Graph the function using a table:

$$f(x) = \frac{1}{2}x^2 - 4x + 6$$

x		y
2		
4		
6		



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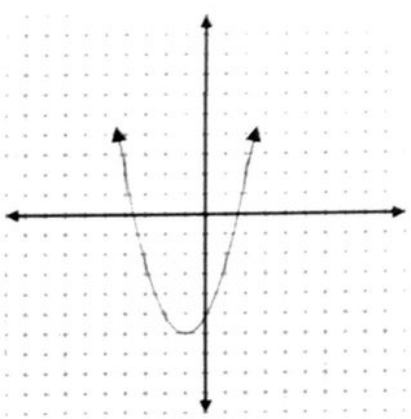


Axis of Symmetry:

_____

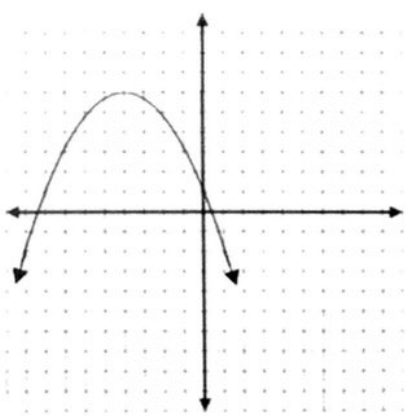
Vertex:

_____

Y-Intercept:

_____

4



Axis of Symmetry:

_____

Vertex:

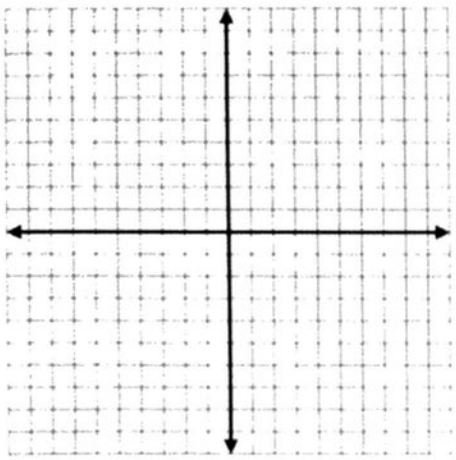
_____

Y-Intercept:

_____

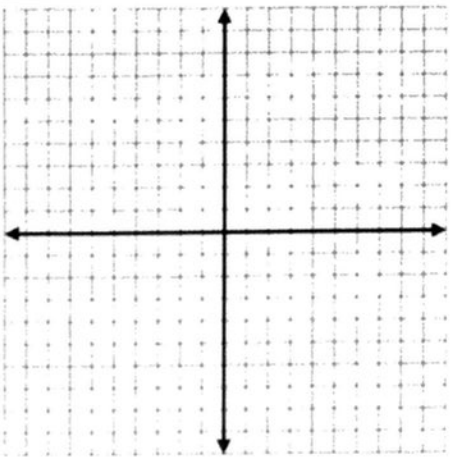
5 $f(x) = -2x^2$

x		y

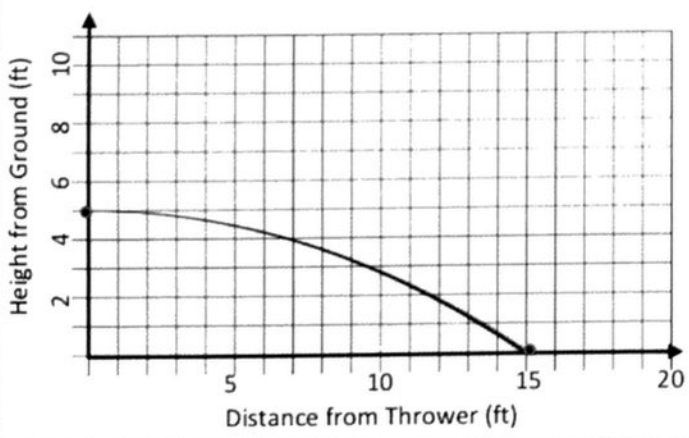


6 $f(x) = 3x^2 - 6x - 2$

x		y



An object that is thrown forward appears to travel in a straight line at first, but eventually curves toward the earth as a result of gravity. The graph below represents the change in the object's height as it travels away from the thrower.



1. Why don't we see the entire parabola in this context? What does this reveal about the domain and range?

2. What is the vertex and what does it represent?

3. What is the x-intercept and what does it represent?