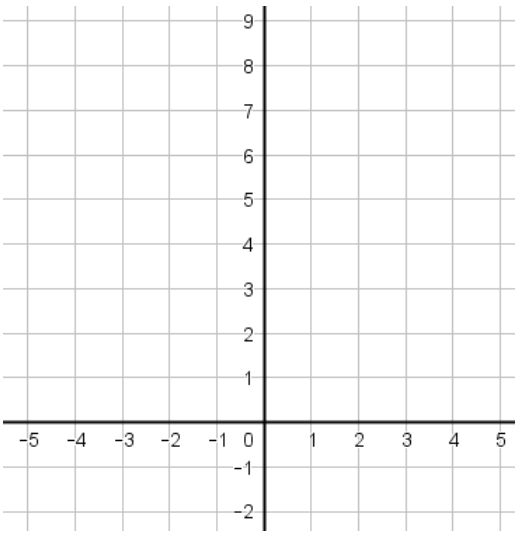
Name: Period: Date:

Math Lab: Graphing Quadratic Equations in Vertex Form

What are the characteristics of the parent graph of a quadratic function?

Complete the table and plot the points to sketch the graph of $\boldsymbol{y = x^2}$.

x	$y = x^2$
-3	
-2	
-1	
0	
1	
2	
3	



The shape of a quadratic function is called a U-shaped graph called a _____.

The highest or lowest point on the curve is the _____. On the parent graph it is located at the _____.

The _____ is the vertical line passing through the vertex.

The domain of $y = x^2$ is _____

and the range is _____.

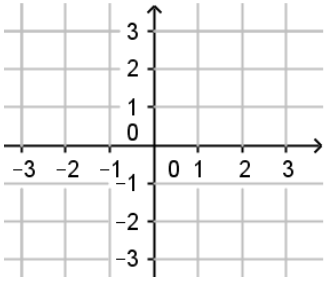
How do you graph a quadratic function in vertex (transformation) form?

The transformations we learned for absolute value functions work the same way for quadratic functions, EXCEPT that you can only use the a-value as the slope from the vertex to the point **one unit right and left** of the vertex.

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

Reflection	Dilations	Horizontal Translations	Vertical Translations
$a > 0$ opens up	$\lvert a\rvert > 1$ narrows the graph	$(x - h)$ shifts right h units	$-k$ shifts down k units
$a < 0$ opens down (reflection over the x-axis)	$\lvert a\rvert < 1$ widens the graph	$(x + h)$ shifts left h units	$+k$ shifts up k units

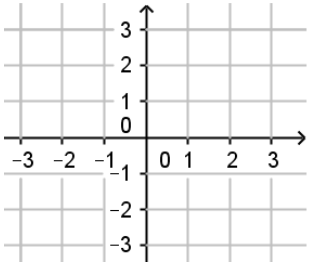
A] $y = -(x - 1)^2 + 2$



Domain:

Range:

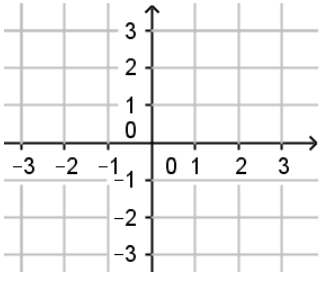
B] $y = \frac{1}{2}(x + 1)^2$



Domain:

Range:

C] $y = 2x^2 - 3$



Domain:

Range: