

7.6 - Vertex Form of a Quadratic Function

Quadratic functions can be written in **general form** or **vertex form**.

General Form: $y = ax^2 + bx + c$ Vertex Form: $y = a(x - p)^2 + q$

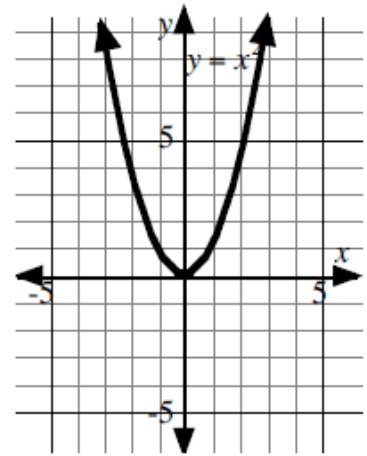
Investigation #1

Analyzing the Graph of $y = x^2 + q$

The graph of $y = f(x) = x^2$ is shown.

$$y = x^2 + 3$$

$$y = x^2 - 3$$



What do we know?

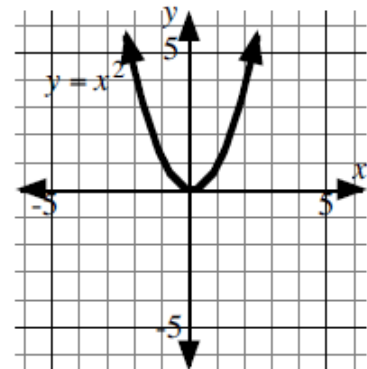
Investigation #2

Analyzing the Graph of $y = (x - p)^2$

The graph of $y = f(x) = x^2$ is shown.

$$y = (x - 2)^2$$

$$y = (x + 2)^2$$



What did we learn?

Putting it all together. How would you explain Vertex Form to someone else?

Show me you understand:

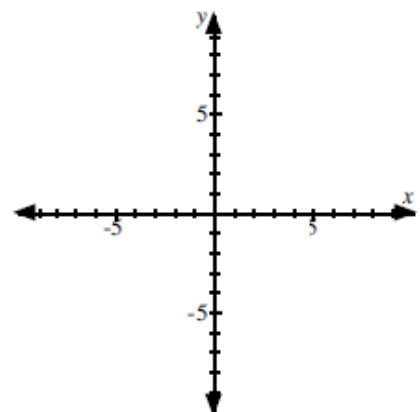
<i>Equation Representing Function</i>	<i>Vertex</i>	<i>Max/Min Value</i>	<i>Equation of Axis of Symmetry</i>
$y = x^2$	$(0, 0)$	min, 0	$x = 0$
$y = (x+2)^2 - 4$			
$y = -2(x-7)^2 + 5$			

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Time to show off:

Consider the graph of the function $f(x) = (x - 2)^2 + 3$.

- Without using a graphing calculator, sketch the graph on the grid.
- State the coordinate of the vertex.
- State the maximum or minimum value of the function.
- State the domain and range of the function.



Example: Determine the quadratic function corresponding to this parabola.

