Graph Quadratics in Vertex Form

Vertex Form:

 $a(x - h)^{2} + k$

- 1. Note if the graph opens up or down: opens up if a > 0 and opens down if a < 0
- Find/graph the vertex: The <u>vertex</u> will be the point (h, k) **THE "h" VALUE FOR THE VERTEX WILL HAVE THE OPPOSITE SIGN OF THE "h" VALUE IN THE QUADRATIC. THE SIGN FOR THE "k" VALUE WILL STAY THE SAME****
- 3. Find/draw (dotted line) the <u>axis of symmetry</u> \rightarrow h value of the quadratic x = h
- 4. Find two additional points, plot them, and plot their reflected points
 - Choose two "x" values, plug them into the expression, and solve for "y" this will give you a point to plot (x, y)
 - Easiest to choose 2 values that are LESS THAN the x coordinate of the vertex, and then reflect those points
 - Can make a chart to visualize this best

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5. <u>Connect the points to create a parabola!</u>

** You can check if your parabola has opened correctly (up or down) based on whether or not the "a" value us positive (opens up) or negative (opens down)**

Examples:

1) Graph $y = 2(x-2)^2 + 1$



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

4) Graph
$$y = \frac{1}{2}(x+2)^2 - 3$$