

NAME: \_\_\_\_\_

*P.I. A.G.4: Identify and graph quadratic (parabolic) functions*

1. Describe the steps for graphing a parabola written in standard form.
2. Describe how the graph of  $y = x^2$  is different from the graph of  $y = x^2 - 5$ .
3. Without graphing, describe how the graph of  $y = -5x^2$  differs from the graph of  $y = x^2$ .
4. Give an example of a quadratic function whose graph opens upward and whose vertex is above the origin.

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7. Give an example of a quadratic function whose graph opens downward and is wider than the graph of  $y = 4x^2$ .

First, find the equation of the axis of symmetry. Use the value of  $x$  to determine the  $y$ -value of the vertex. Then, find the  $y$ -intercept by finding the value of  $y$  for which  $x = 0$ . Use the two points, the vertex and the  $y$ -intercept to draw one side of the graph. Use the line of symmetry to sketch the other half of the

[1] graph.

[2]  $y = x^2 - 5$  is the graph of  $y = x^2$  translated vertically down 5 units.

[3] It is narrower and opens downward.

[4] Answers may vary. Sample:  $y = x^2 + 3$

[5] Answers may vary. Sample:  $y = 0.25x^2$

[6] Answers may vary. Sample:  $y = -2x^2 - 2$

[7] Answers may vary. Sample:  $y = -3x^2$