Algebra 1 Name _____

Review 10.1-10.2 Date _____ Hour _____

10-1 Exploring Quadratic Graphs

Remember:

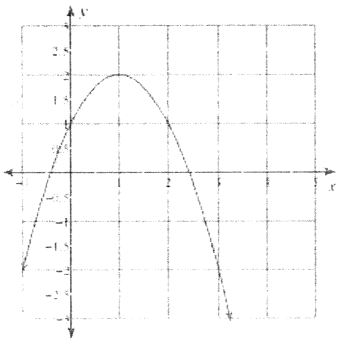
- $y = ax^2 + bx + c$ ⟶ always makes a parabola
- $y = ax^2$ ⟶ vertex is always (0, 0)
- $y = ax^2 + c$ ⟶ vertex is always (0, c)

Examples:

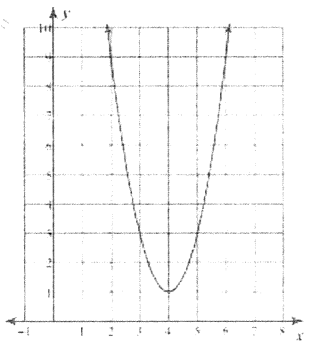
$y = 3x^2$	$y = \frac{1}{2}x^2$	$y = -x^2$	$y = 2x^2 + 7$	$y = -4x^2 - 1$
vertex (0, 0)	vertex (0, 0)	vertex (0, 0)	vertex (0, 7)	vertex (0, -1)

Write the coordinates of the vertex of each graph. Tell whether it is a minimum or a maximum. Then sketch a graph of the equation.

1) vertex _____

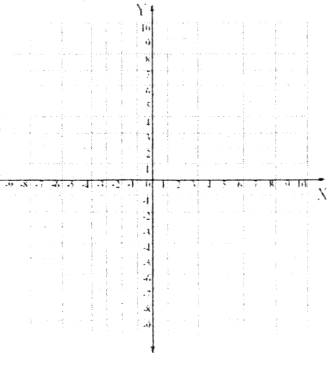


2) vertex _____



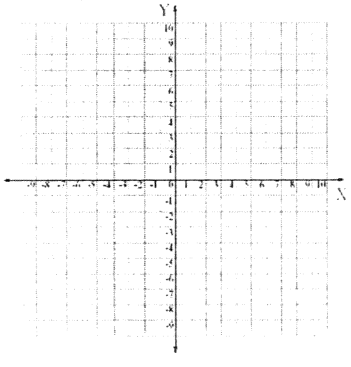
Sketch the graph of each equation. Draw the axis of symmetry with a colored pencil and label the vertex. **Check the graph on a graphing calculator to make sure it is correct!**

3) $y = 3x^2$



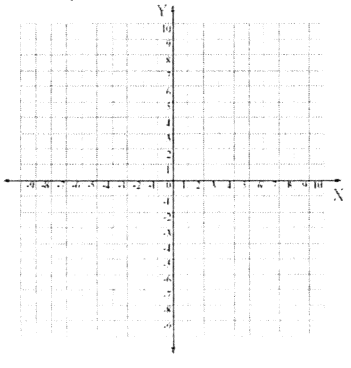
ertex (____)

4) $y = -2x^2 + 3$



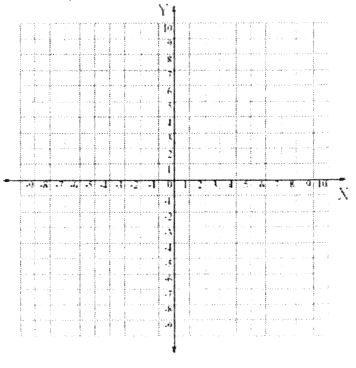
vertex (____)

5) $y = x^2 - 4$



vertex (____)

6) $y = \frac{1}{2}x^2$



vertex (____)

10-2 Graphing $y = ax^2 + bx + c$

****Study this example before doing the problems below!!****

Example Sketch the graph of $y = x^2 - 2x - 3$

1. First find the axis of symmetry: At the vertex, $x = -\frac{b}{2a}$

$a = 1$, $b = -2$ → $x = \frac{-b}{2a} = \frac{2}{2(1)} = \frac{2}{2} = 1$ → axis of symmetry $x = 1$

2. Vertex: Substitute (plug in) x to find the value of y at the vertex.

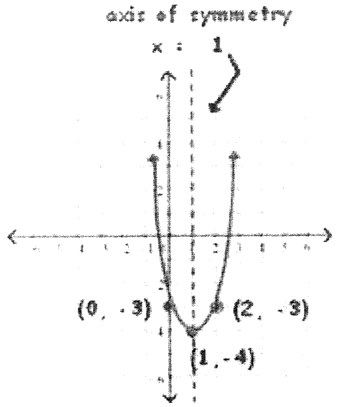
$x = 1$ → plug in 1 for x → $y = (1)^2 - 2(1) - 3$

$y = 1 - 2 - 3$

$y = -4$ → vertex $(1, -4)$

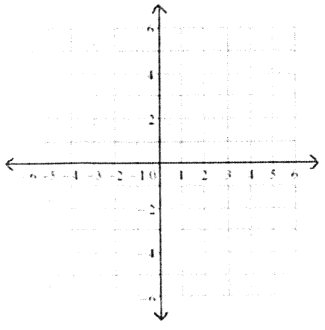
3. Use a table of values to find other points. Graph the vertex and the other points to make the parabola. Draw in the axis of symmetry with a colored pencil.

x	$x^2 - 2x - 3$	y
0	$0^2 - 2(0) - 3$	-3
2	$2^2 - 2(2) - 3$ $= 4 - 4 - 3$ $= -3$	-3



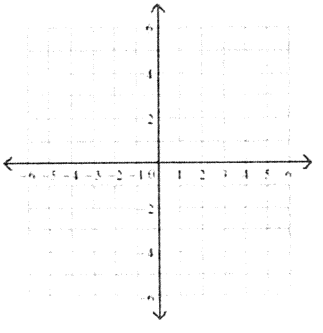
Graph each function. Follow the same steps as in the example above. **Use a colored pencil to draw in the axis of symmetry.

1) $y = 3x^2 - 6x + 4$



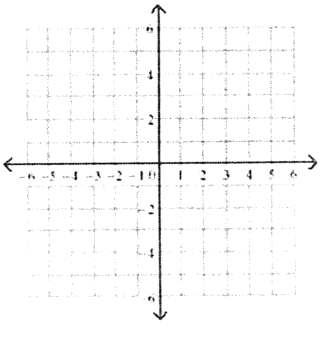
vertex (____)

2) $y = x^2 + 4x + 1$



vertex (____)

3) $y = -3x^2 + 6$



vertex (____)