Name: _____ Date: _____

Transformations of Vertex Form

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

Parabola Parent Graph

Vertex: (h, k)
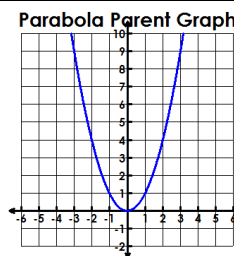
What does _a_ do?	**What does _h_ do?**	**What does _k_ do?**
• reflect across the x-axis. (–a) • vertical stretch (a >1) • vertical shrink (0<a<1)	• moves left (+h) • moves right (–h)	• moves up (+k) • moves down (–k)

Determine what transformations are applied in the following functions.

1. $f(x) = (x-3)^2 + 5$

2. $f(x) = -(x-2)^2 + 7$

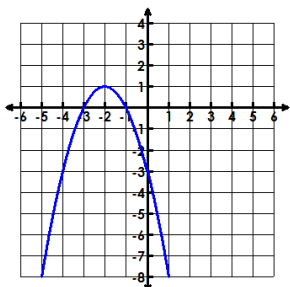3. $f(x) = \dfrac{1}{3}(x+3)^2 - 2$

4. $f(x) = 4(x-3)^2 + 8$

# Vertex: (h,k)	Axis of Symmetry: $x = h$

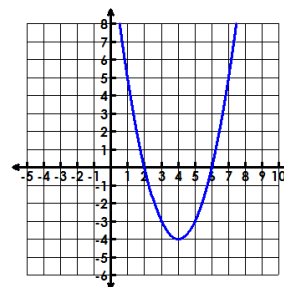**Given the graph of the quadratic, find a, h, & k. Then write the equation in vertex form.**

5.
- a = _____
- h = _____
- k = _____
- f(x) =

6.
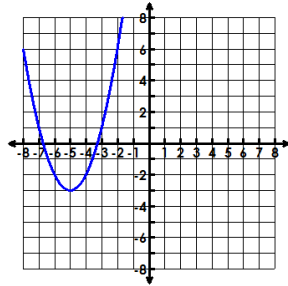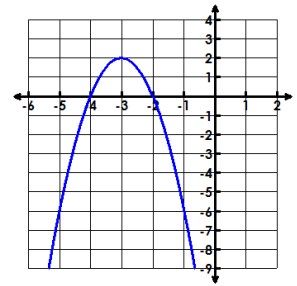- a = _____
- h = _____
- k = _____
- f(x) =

7.
- a = _____
- h = _____
- k = _____
- f(x) =

8.
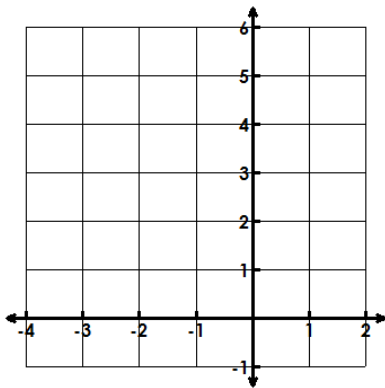- a = _____
- h = _____
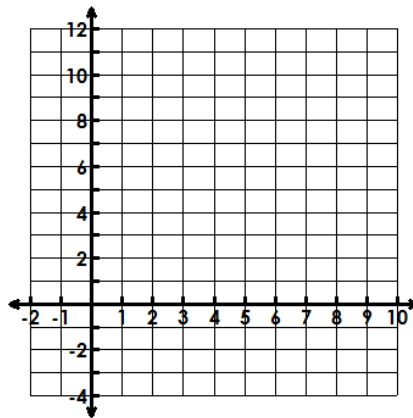- k = _____
- f(x) =

Steps to Graphing in VERTEX form:
- Find the vertex. Plot it.
- Find the axis of symmetry. Graph this lightly as a dashed vertical line.
- On your calculator: TABLE, EDIT FUCTION, ENTER, START = <enter your h-value>, CALC, ENTER. Scroll up and down to get other ordered pairs.
- Connect in a u-shape with arrows at each end.

Graph & identify the vertex and axis of symmetry.

9. $f(x) = (x+2)^2 + 1$

10. $f(x) = 2(x-4)^2 - 1$

11. $f(x) = -(x-1)^2 + 2$