Practice: Vertex Form Day 2 Name: _____

VERTEX FORM
of a Quadratic Equation

* Keep sign on k, Switch sign on h for the vertex

- **Vertex Form** of a **Quadratic Equation:** $y = a(x-h)^2 + k$
- (h, k) is the **vertex;** x = h is the **axis of symmetry**

Directions: Give the axis of symmetry and vertex of each equation.

1. $y = (x+4)^2 - 2$
h k

Axis of Symmetry: x = -4
Vertex: (-4, -2)

2. $y = -(x-3)^2 + 0$
h k

Axis of Symmetry: x = 3
Vertex: (3, 0)

3. $y = (x-5)^2 - 4$
h k

Axis of Symmetry: x = 5
Vertex: (5, -4)

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

Axis of Symmetry: x = 0
Vertex: (0, 3)

+ ↑↑
- ↓↓

+ Left
- Right

+ Up
- Down

Vertex Form for a quadratic function is $y = a(x-h)^2 + k$ where (,) is the vertex of the parabola.

Practice:

1. Describe the transformation that occurred compared to the parent function $y = x^2$.

   a) $f(x) = -x^2 + 10$ _____

   b) $g(x) = (x+4)^2 + 9$ _____

   c) $y = -(x-22)^2$ _____

   d) $h(x) = (-x+5)^2$ _____

   e) $y = (x-6)^2 + 2$ _____

2. Write a quadratic equation whose graph is shifted down 7 units. _____

3. Write a quadratic equation whose graph is shifted left 2 units. _____

4. Write two quadratic equations that are reflections of each other. _____

5. Given $y = x^2 - 1$, write an equation whose graph is reflected and shifted up 5 units. _____

6. What is the vertex of the function $y = (x-6)^2 - 8$? _____