Name: _____ Date: _____

Converting from Vertex Form to Standard Form

$$y = a(x-h)^2 + k \longrightarrow y = ax^2 + bx + c$$

Multiply out the binomial, distribute (if needed), & combine like terms.

1. $f(x) = (x-1)^2 + 8$

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

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

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

Converting from Standard Form to Vertex Form

$$y = ax^2 + bx + c \longrightarrow y = a(x-h)^2 + k$$

Find the Vertex *Method:*

- ★ Identify a, b, & c.
- ★ Find the line of symmetry or "*h*" by using $h = \frac{-b}{2a}$
- ★ Find the y value of the vertex, or "*k*" by substituting "h" into the equation as "x".
- ★ Go get "a" (it stays the same).
- ★ Write the equation in vertex form using your found values of *a*, *h*, and *k*.

5. $f(x) = x^2 + 8x + 1$

6. $f(x) = x^2 + 10x + 20$

7. $f(x) = 3x^2 - 6x + 5$

8. $f(x) = -2x^2 - 16x - 32$

Using the Ti-36 Calculator:

- ★ 2nd "Poly-Solv"
- ★ Type in a, b, and c
- ★ Hit ENTER on SOLVE
- ★ Scroll down until a, h, and k appear on the screen.

9. $f(x) = x^2 + 6x + 8$

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

11. $f(x) = 3x^2 + 24x + 50$

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