

Changing From Standard to vertex Form

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

1. Find h, k
2. Plug it in $y = a(x-h)^2 + k$
3. The "a" value is the same for both

ex $y = x^2 + 6x + 12$

$$a = 1 \quad b = 6 \quad c = 12$$

$$x = \frac{-b}{2a} = \frac{-6}{2(1)} = -3$$

$$y = (-3)^2 + 6(-3) + 12 = 3$$

$$y = (x+3)^2 + 3$$

h, k
 $(-3, 3)$

ex $y = 2x^2 + 8x + 7$

$$a = 2 \quad b = 8 \quad c = 7$$

$$x = \frac{-b}{2a} = \frac{-8}{2(2)} = \frac{-8}{4} = -2$$

$$y = 2(-2)^2 + 8(-2) + 7 = -1$$

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

$(-2, -1)$

$$y = 2(x+2)^2 - 1$$