

STANDARD to VERTEX -b/2a Method

Change $x^2 + 6x + 11$ to $(x-h)^2 + k$

STEP 1: Find x using: $h = \frac{-b}{2a}$

$$a=1, b=6 \quad h = \frac{-6}{2 \cdot 1} = \frac{-6}{2} = -3$$

STEP 2: Find k using substitution:

$$k = (-3)^2 + 6(-3) + 11 = 2$$

STEP 3: Put h and k into vertex form:

Vertex form $\rightarrow (x - h)^2 + k$

$$(x - (-3))^2 + 2$$

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

STANDARD to VERTEX SHORT CUT FOR A=1

Use ONLY when $a=1$

$$\text{Use: } \left(x - \frac{b}{2}\right)^2 - \left(\frac{b}{2}\right)^2 + c$$

$$a = 1 \rightarrow 1x^2 + 6x + 11$$

$$b=6 \quad \text{Divide } b \text{ by } 2: \frac{6}{2} = 3$$

$$(x - 3)^2 - (3)^2 + 11$$

$$(x - 3)^2 - 9 + 11$$

$$(x - 3)^2 + 2$$