

Convert from Standard Form to Vertex Form

(Completing the Square – Example 2)

Step 1: Check the coefficient of the x^2 term. If 1 goto step 2
If not 1, factor out the coefficient from the x^2 and x term.

Step 2: Calculate the value of : $(b/2)^2$

Step 3: Group the x^2 and x term together, then add $(b/2)^2$ and subtract $(b/2)^2$

Step 4: Factor & Simplify

Example 2: $y = 2x^2 + 4x - 1$ (Standard Form)

$$y = 2(x^2 + 2x) - 1 \quad (2/2)^2 = (1)^2 = 1$$

$$y = 2(x^2 + 2x + 1) - 1 - 2 \quad \text{(WHY did we subtract 2 instead of 1?)}$$

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

$$y = 2(x + 1)^2 - 3 \quad \text{(Vertex Form)}$$