

Writing quadratic functions in vertex form by: Completing the Square

$$x^2 + bx \quad \longrightarrow \quad x^2 + bx + \left(\frac{b}{2}\right)^2 \quad \longrightarrow \quad \left(x + \frac{b}{2}\right)^2$$

$$y = x^2 + 4x - 6$$

$$y = x^2 + 4x + 4 - 6 - 4$$

$$y = (x + 2)^2 - 10$$

$$y = x^2 + 6x - 11$$

$$y = x^2 + 6x + 9 - 11 - 9$$

$$y = (x + 3)^2 - 20$$