

Find x-intercepts by factoring. Find the vertex and graph the quadratic.

$$1. y = x^2 + 2x - 8$$

$$\text{x-Intercepts: } \underline{-4} \text{ and } \underline{2}$$

$$\begin{array}{r} 4 \overline{) -8} \\ \underline{-8} \\ 0 \end{array}$$

$$y = (x+4)(x-2)$$

$$0 = (x+4)(x-2)$$

$$x = -4 \quad x = 2$$

$$\text{y-int: } \underline{(0, -8)}$$

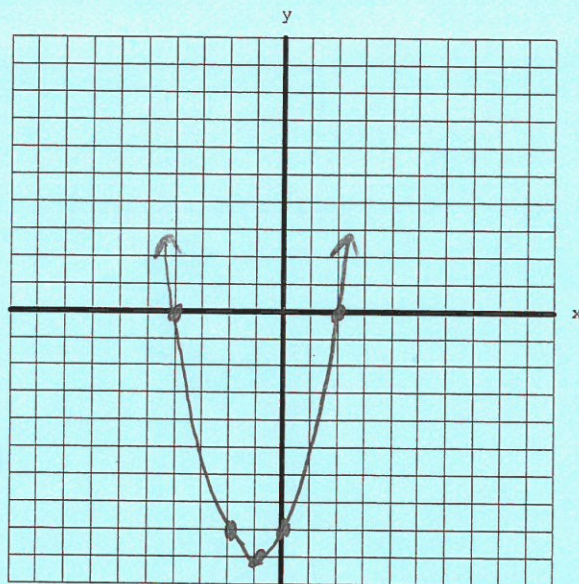
$$\text{Vertex: } \underline{(-1, -9)}$$

$$x = \frac{-b}{2a}$$

$$x = \frac{-2}{2(1)}$$

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

$$y = 1 - 2 - 8$$



Find x-intercepts and vertex by completing the square.

$$2. y = x^2 - 8x + 8$$

$$\text{x-Intercepts: } \underline{6.8} \text{ and } \underline{1.2}$$

$$\square = \left(\frac{b}{2}\right)^2 = \left(\frac{-8}{2}\right)^2 = 16$$

$$y - 8 = x^2 - 8x$$

$$y - 8 + 16 = x^2 - 8x + 16$$

$$y + 8 = (x - 4)^2$$

$$y = (x - 4)^2 - 8$$

$$8 = (x - 4)^2$$

$$\pm\sqrt{8} = x - 4$$

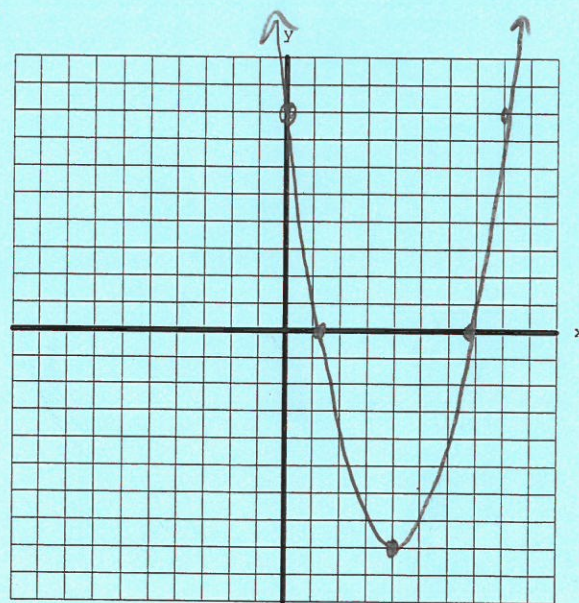
$$x = 4 + \sqrt{8}$$

$$x = 4 - \sqrt{8}$$

$$\text{Vertex form: } \underline{y = (x - 4)^2 - 8}$$

$$\text{Vertex: } \underline{(4, -8)}$$

$$\text{y-int: } \underline{(0, 8)}$$



Find x-intercepts by quadratic formula. Find the vertex and graph the quadratic.

$$3. y = x^2 - 7x + 4$$

$$\text{x-Intercepts: } \underline{6.4} \text{ and } \underline{0.6}$$

$$x = \frac{7 \pm \sqrt{(-7)^2 - 4(1)(4)}}{2(1)}$$

$$x = \frac{7 \pm \sqrt{33}}{2}$$

$$\text{y-int: } \underline{(0, 4)}$$

$$\text{Vertex: } \underline{(3\frac{1}{2}, -8\frac{1}{4})}$$

$$x = \frac{-b}{2a}$$

$$x = \frac{7}{2}$$

$$y = -8\frac{1}{4}$$

