

Review 10.3

Complete the square for

$$a. x^2 - 10x + \underline{25}$$

$$(x-5)^2$$

$$b. x^2 + 7x + \underline{\frac{49}{4}}$$

$$\left(x + \frac{7}{2}\right)^2 \quad \frac{7}{2} \cdot \frac{7}{2}$$

Rewrite each equation in vertex form,  
 $y = a(x - \underline{h})^2 + k$ . Find the vertex.  
 $\downarrow (h, k)$

$$a. f(x) = x^2 + 2x - 8$$

$$f(x) = (x^2 + \underline{2x} + 1) - 8 - 1$$

$$x^2 + 1x + 1x + 1$$

$$f(x) = (x+1)^2 - 9$$

$$V: (-1, -9) \quad (h, k)$$

$$b. f(x) = x^2 - 6x + 5$$

$$f(x) = (x^2 - \underline{6x} + 9) + 5 - 9$$

$$x^2 - 3x - 3x + 9$$

$$f(x) = (x-3)^2 - 4$$

$$V: (3, -4)$$

$$c. f(x) = 3x^2 + 12x + 7$$

$$f(x) = (3x^2 + 12x + \underline{12}) + 7 - \underline{12}$$

$$f(x) = 3(x^2 + 4x + \underline{4}) + 7 - \underline{12}$$

$$f(x) = 3(x+2)^2 - 5$$

$$v: (-2, -5)$$

$$d. f(x) = 7x^2 + 14x + 10$$

$$f(x) = (7x^2 + 14x + \underline{7}) + 10 - \underline{7}$$

$$f(x) = 7(x^2 + 2x + \underline{1}) + 10 - \underline{7}$$

$$f(x) = 7(x+1)^2 + 3$$

$$v: (-1, 3)$$

## Sec. 10.4 Solving Equations of the form $x^2 + bx + c = 0$

Solve by completing the square.

a.  $x^2 + 2x = 3$

$$x^2 + 2x + 1 = 3 + 1$$

$$(x + 1)^2 = 4$$

$\sqrt{12} \leq 4$  (2) (3)

$$\sqrt{(x+1)^2} = \pm \sqrt{4}$$

$2\sqrt{3}$

$$x + 1 = \pm 2$$

$$\frac{-1 \quad -1}{x = -1 \pm 2} \begin{cases} -1 + 2 = 1 \\ -1 - 2 = -3 \end{cases}$$

Find the zeros.  $\rightarrow y = 0$

a.  $y = x^2 - 4x + 1$

$$0 = (x^2 - 4x + 4) + 1 - 4$$

$$0 = (x - 2)^2 - 3$$

\* p. 496  $(25 - 63)e00$