

## Completing the Square

$$\text{Ex) } x^2 + 6x = 27 - 6x$$

$$x^2 + 6x + 9 = 27 + 9$$

$$x^2 + 6x + 9 = 36$$

$$(x + 3)(x + 3) = 36$$

$$\sqrt{(x+3)^2} = \sqrt{36}$$

$$x + 3 = \pm 6$$

$$x = -3 \pm 6 \rightarrow \begin{aligned} x &= -3 + 6 = 3 \\ x &= -3 - 6 = -9 \end{aligned}$$

$$\left(\frac{6}{2}\right)^2 = 9$$

Step 1: Get variables on one side, #'s on the other

Step 2: Insert  $\square$

Step 3: To fill  $\square$ 's use  $\left(\frac{b}{2}\right)^2$

Step 4: Factor & Solve

$$\text{Ex) } x^2 - \frac{1}{2}x + .0625 = 24 + .0625$$

$$\left(\frac{-1/2}{2}\right)^2 = .0625$$

$$x^2 - \frac{1}{2}x + .0625 = 24.0625$$

$$(x - .25)(x - .25) = 24.0625$$

$$\sqrt{(x - .25)^2} = \sqrt{24.0625}$$

$$x - .25 = \pm \sqrt{24.0625}$$

$$+ .25 \quad + .25$$

$$x = .25 \pm \sqrt{24.0625}$$

p. 345

8-10, 26-31