

General Strategy for Solving Equations in One Variable

- 1) If the equation contains fractions, find the *Least Common Denominator (LCD)* and distribute the LCD through the **Whole** equation to clear the denominators.

$$\frac{2x}{x+3} - 2 = \frac{x+2}{x-3}; \text{ Here the LCD is } (x+3) \text{ and } (x-3)$$

$$(x+3)(x-3) \left(\frac{2x}{x+3} - 2 = \frac{x+2}{x-3} \right)$$

$$(x+3)(x-3) \left(\frac{2x}{x+3} \right) + (x+3)(x-3)(-2) = (x+3)(x-3) \left(\frac{x+2}{x-3} \right)$$

$$(x-3)(2x) + x^2 - 9(-2) = (x+3)(x+2)$$

$$2x^2 - 6x - 2x^2 + 18 = x^2 + 5x + 6$$

- 2) Use the *Distributive Tool* (Property) to remove parentheses if they occur.
- 3) Simplify each side of the equation by combining (adding) like terms.
- 4) If equation has a *squared term*, then get all terms to one side and set the other side equal to zero. Otherwise, get all variable terms on one side by using the *Additive Inverse Tool* and all numbers on the other side.

$$2x^2 - 6x - 2x^2 + 18 = x^2 + 5x + 6$$

$$-6x + 18 = x^2 + 5x + 6$$

$$0 = x^2 + 11x - 12 - \text{Now Factor!}$$

$$0 = (x+12)(x-1) - \text{Set each factor equal to Zero and solve.}$$

$$x = -12 \text{ and } x = 1$$

- 5) **Now check your results in the original equation!**