

# 4.5: Solve Rational Expression

- Steps: 1) restrictions (denom  $\neq 0$ )  
2) cross multiply  
3) clean up & solve

Ex 1)

$$\frac{7}{n+2} \neq \frac{6}{n-5}$$

$$n+2 \neq 0$$
$$n \neq -2$$

$$n-5 \neq 0$$
$$n \neq 5$$

$$7(n-5) = 6(n+2)$$

$$7n - 35 = 6n + 12$$
$$-6n + 35 = -6n + 35$$

$$n = 47$$

Ex 2)

solve:  $\frac{x-8}{x-3} \neq \frac{x+5}{x+3}$

$$x \neq \pm 3$$

$$(x-8)(x+3) = (x-3)(x+5)$$

$$x^2 + 3x - 8x - 24 = x^2 + 5x - 3x - 15$$

$$-5x - 24 = 2x + 15$$
$$-2x + 24 = 2x + 24$$

$$\frac{-7x}{-7} = \frac{9}{-7}$$

$$x = -\frac{9}{7}$$

Ex 3) Solve:  $\frac{x^2}{x-9} \rightarrow \frac{81}{x-9}$   $(x \neq 9)$

$$x^2(x-9) = 81(x-9)$$

$$\pm \sqrt{x^2} = \sqrt{81}$$

$$x = \pm 9$$

$$\boxed{x = -9}$$