

Solving Rational Equations (Unit 4 Day 6)

(ex)

$$\frac{1}{n^2} + \frac{1}{n} = \frac{1}{2n^2}$$

$$\left(\frac{1}{n^2} + \frac{1}{n} = \frac{1}{2n^2} \right) \frac{2n^2}{1}$$

$$2 + 2n = 1$$

$$2n = -1$$

$$n = -\frac{1}{2}$$

$$n^2 \neq 0$$

$$n \neq 0$$

$$2n^2 \neq 0$$

$$n \neq 0$$

$$n \neq 0$$

(ex)

$$\left(\frac{1}{m^2 - m} \right) + \left(\frac{1}{m} \right) = \frac{5}{m^2 - m}$$

Factor first!

$$\left(\frac{1}{m(m-1)} + \frac{1}{m} = \frac{5}{m(m-1)} \right) (m)(m-1)$$

$$1 + 1(m-1) = 5$$

$$1 + m - 1 = 5$$

$$\boxed{m = 5}$$

$$m(m-1) \neq 0$$

$$m \neq \begin{matrix} m(m-1) = 0 \\ \downarrow \quad \downarrow \\ m \neq 0 \quad m-1 = 0 \\ \quad \quad \quad m \neq 1 \end{matrix}$$

Restrictions

(ex)

$$\frac{-2}{x+4} = \frac{4}{x+3}$$

$$-2(x+3) = 4(x+4)$$

$$-2x - 6 = 4x + 16$$

$$\frac{-2x}{6} = \frac{6x}{6}$$

$$x = \frac{-22}{6} = \boxed{-\frac{11}{3}}$$

$$x \neq -4, -3$$

$$\textcircled{\text{ex}} \left(\frac{5x}{x-2} = \frac{7}{1} + \frac{10}{x-2} \right) (x-2)$$

$$5x = 7(x-2) + 10$$

$$5x = 7x - 14 + 10$$

$$5x = 7x - 4$$

$$-2x = -4$$

$$x = 2$$

$$x-2 \neq 0$$

$$x \neq 2$$

no solution

$$\textcircled{\text{ex}} \frac{2}{x+2} + \frac{5}{x-2} = \frac{6}{x^2-4}$$

$$\left(\frac{2}{x+2} + \frac{5}{x-2} = \frac{6}{(x+2)(x-2)} \right) (x+2)(x-2)$$

$$2(x-2) + 5(x+2) = 6$$

$$2x - 4 + 5x + 10 = 6$$

$$7x + 6 = 6$$

$$7x = 0$$

$$\textcircled{x=0}$$

$$\boxed{x \neq 2, -2}$$