

WARMUP

Simplify:

$$1) \frac{\left(\frac{1}{9} - \frac{1}{y}\right) 9y}{\left(\frac{9-y}{9}\right) 9y}$$

$$\text{LCD} = 9y$$

$$= \frac{\cancel{9y} \cdot \frac{1}{\cancel{9}} - \cancel{9y} \cdot \frac{1}{\cancel{y}}}{\frac{9-y}{\cancel{9}} \cdot \frac{\cancel{9y}}{1}} = \frac{\overset{-1}{y-9}}{(9-y)9}$$

Solve: 2) $\frac{x}{5} - \frac{x}{6} = 1$

$$= -\frac{1}{9}$$

3) $1 - \frac{9}{x} = 4$

$$33) \frac{\left(\frac{1}{x+2}\right) \frac{x+2}{1}}{\left(1 + \frac{1}{x+2}\right) \frac{x+2}{1}}$$

$$\text{LCD} = x+2$$

$$= \frac{1}{1 \cdot \frac{x+2}{1} + \frac{1}{x+2} \cdot \frac{x+2}{1}}$$

$$= \frac{1}{x+2+1} = \frac{1}{x+3}$$

Section 7.6 Solving Rational Equations

ex: $\frac{3}{1} \cdot \frac{x}{4} = \frac{12}{1} \left(\frac{1}{4} + \frac{x}{6} \right)$

$$4 = 2 \cdot 2$$

$$6 = 2 \cdot 3$$

$$\text{LCD} = 2 \cdot 2 \cdot 3 = 12$$

$$3x = \frac{3}{1} \cdot \frac{1}{4} + \frac{2}{1} \cdot \frac{x}{6}$$

$$3x = 3 + 2x$$

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

$$x = 3$$

ex: $\left(\frac{x}{6} = \frac{1}{6} + \frac{x}{8}\right) \frac{24}{1}$

LCD

$$6 = 2 \cdot 3$$

$$8 = 2 \cdot 2 \cdot 2$$

$$\text{LCD} = 2 \cdot 3 \cdot 2 \cdot 2 = 24$$

$$\frac{4}{24} \cdot \frac{x}{6} = \frac{4}{24} \cdot \frac{1}{6} + \frac{3}{24} \cdot \frac{x}{8}$$

$$4x = 4 + 3x$$

$$x = 4$$

ex $\left(\frac{1}{x} = \frac{1}{5} + \frac{3}{2x}\right) \frac{10x}{1}$

When there's a variable in denominator, state what x can't be. This becomes a restriction.

$$x \neq 0$$

$$\text{LCD: } x = x$$

$$5 = \cdot 5$$

$$2x = \frac{x \cdot 2}{1}$$

$$x \cdot 5 \cdot 2 = 10x$$

$$\frac{10x}{1} \cdot \frac{1}{x} = \frac{2}{1} \cdot \frac{1}{5} + \frac{3}{2x} \cdot \frac{10x}{1}$$

$$10 = 2x + 15$$

$$-15$$

$$-15$$

$$\frac{-5}{2} = \frac{2x}{2}$$

$$x = \frac{-5}{2}$$

$$\text{ex: } \frac{5}{2x} = \frac{17}{18} - \frac{1}{3x} \quad x \neq 0$$

$$\text{LCD} = 18x$$

$$2x = 2 \cdot x$$

$$18 = 2 \cdot 3 \cdot 3$$

$$3x = x \cdot 3$$

$$2 \cdot x \cdot 3 \cdot 3 = 18x$$

$$\frac{18x}{1} \left(\frac{5}{2x} = \frac{17}{18} - \frac{1}{3x} \right)$$

$$\frac{18x}{1} \cdot \frac{5}{2x} = \frac{18x}{1} \cdot \frac{17}{18} - \frac{18x}{1} \cdot \frac{1}{3x}$$

$$45 = 17x - 6$$

$$+6 \qquad +6$$

$$\frac{51}{17} = \frac{17x}{17}$$

$$x = 3$$

$$\text{ex: } \frac{2x}{1} \left(x + \frac{1}{x} = \frac{5}{2} \right) \quad x \neq 0$$

$$x \neq 0$$

$$\text{LCD} = 2x$$

$$\frac{2x}{1} \cdot x + \frac{2x}{1} \cdot \frac{1}{x} = \frac{2x}{1} \cdot \frac{5}{2}$$

$$2x^2 + 2 = 5x$$

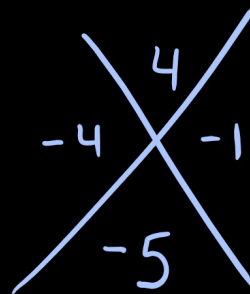
$$2x^2 - 5x + 2 = 0$$

$$(2x - 1)(x - 2) = 0$$

$$2x - 1 = 0 \qquad x - 2 = 0$$

$$2x = 1 \qquad x = 2$$

$$x = \frac{1}{2}$$



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

$$2x(x - 2) - 1(x - 2) = 0$$

$$(2x - 1)(x - 2)$$

Assignment p 513 1, 5, 11, 16, 17, 21

$$16) \frac{7x-4}{5x} = \frac{9}{5} - \frac{4}{x} \quad \text{LCD} = 5x$$

$$\frac{\cancel{5x}}{1} \cdot \frac{7x-4}{\cancel{5x}} = \frac{\cancel{5x}}{1} \cdot \frac{9}{5} - \frac{\cancel{5x}}{1} \cdot \frac{4}{\cancel{x}}$$

$$\begin{array}{r} 7x-4 = 9x - 20 \\ -9x \quad -9x \\ \hline \end{array}$$

$$\begin{array}{r} -2x-4 = -20 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\begin{array}{r} -2x = -16 \\ -2 \quad -2 \\ \hline \end{array}$$

$$x = 8$$