

WARMUP

Add or subtract:

$$1) \frac{5}{6x} \cdot \frac{4}{4} + \frac{7}{8x} \cdot \frac{3}{3} \quad \begin{array}{l} 6x = 2 \cdot 3 \cdot x \cdot \boxed{4} \\ 8x = 2 \cdot \boxed{3} \cdot x \cdot 2 \cdot 2 \end{array}$$

$$\frac{20}{24x} + \frac{21}{24x} = \frac{41}{24x}$$

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

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

$$\frac{3}{x-2} \cdot \frac{(x+3)}{(x+3)} + \frac{4}{x+3} \cdot \frac{(x-2)}{(x-2)}$$

$$\frac{3x+9 + 4x-8}{(x-2)(x+3)}$$

$$\frac{7x+1}{(x-2)(x+3)}$$

$$3) \frac{2x+9}{x^2-7x+12} - \frac{2}{x-3}$$

$$\begin{array}{r} 12 \\ -3 \times -4 \\ -7 \end{array}$$

$$\frac{2x+9}{(x-3)(x-4)} - \frac{2}{x-3} \cdot \frac{(x-4)}{(x-4)}$$

$$\frac{2x+9 - 2x+8}{(x-3)(x-4)}$$

$$\frac{17}{(x-3)(x-4)}$$

Section 7.5 Complex Fractions

$$\frac{81}{1 + \frac{1}{9}}$$

complex fraction

ex: $\frac{\frac{1}{3} + \frac{2}{5}}{\frac{2}{5} - \frac{1}{3}}$

1) Find LCD for whole expressions:

$$3 = 3$$

$$5 = 5$$

$$\text{LCD} = 3 \cdot 5 = 15$$

2) Multiply top and bottom by LCD

$$\frac{15 \left(\frac{1}{3} + \frac{2}{5} \right)}{15 \left(\frac{2}{5} - \frac{1}{3} \right)}$$

3) Distribute and simplify:

$$\frac{\overset{5}{\cancel{15}} \cdot \frac{1}{\cancel{3}} + \overset{3}{\cancel{15}} \cdot \frac{2}{\cancel{5}}}{\overset{3}{\cancel{15}} \cdot \frac{2}{\cancel{5}} - \overset{5}{\cancel{15}} \cdot \frac{1}{\cancel{3}}} = \frac{5 + 6}{6 - 5} = \frac{11}{1} = 11$$

$$\text{ex: } \frac{12 \left(\frac{1}{4} + \frac{2}{3} \right)}{12 \left(\frac{2}{3} - \frac{1}{4} \right)} = \frac{12 \cdot \frac{1}{4} + 12 \cdot \frac{2}{3}}{12 \cdot \frac{2}{3} - 12 \cdot \frac{1}{4}} = \frac{3 + 8}{8 - 3}$$

$$4 = 2 \cdot 2$$

$$3 = 3$$

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

calc. $12 * 1/4$
 $12 * 2/3$

$$= \frac{11}{5}$$

$$\underline{\text{ex}}: \frac{x \left(1 + \frac{1}{x}\right)}{x \left(1 - \frac{1}{x}\right)} = \frac{x + \cancel{x} \cdot \frac{1}{\cancel{x}}}{x - \cancel{x} \cdot \frac{1}{\cancel{x}}} = \frac{x+1}{x-1}$$

$$\text{LCD} = x$$

$$\underline{\text{ex}}: \frac{x \left(2 - \frac{1}{x}\right)}{x \left(2 + \frac{1}{x}\right)} = \frac{x \cdot 2 - \cancel{x} \cdot \frac{1}{\cancel{x}}}{x \cdot 2 + \cancel{x} \cdot \frac{1}{\cancel{x}}} = \frac{2x-1}{2x+1}$$

$$\text{LCD} = x$$

$$\underline{\text{ex}}: \frac{x^2 \left(\frac{8}{x^2} - \frac{2}{x}\right)}{x^2 \left(\frac{10}{x} - \frac{6}{x^2}\right)} = \frac{\cancel{x} \cdot \frac{8}{\cancel{x^2}} - x^{\cancel{2}} \cdot \frac{2}{\cancel{x}}}{x^{\cancel{2}} \cdot \frac{10}{\cancel{x}} - \cancel{x} \cdot \frac{6}{\cancel{x^2}}} = \frac{8-2x}{10x-6}$$

$$\begin{aligned} \text{LCD} \\ x^2 &= x \cdot x \\ x &= x \\ \hline \text{LCD} &= x \cdot x = x^2 \end{aligned}$$

$$\begin{aligned} &= \frac{\cancel{x}(4-x)}{\cancel{x}(5x-3)} \\ &= \frac{4-x}{5x-3} \end{aligned}$$

p503-504

1-37 eoo

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