

## Chapter 7.7 Complex Fractions

Best method: Multiply all terms in the numerator and all terms in the denominator by the overall LCD of all such terms.

Ex: 
$$\frac{\frac{2}{x^2} + \frac{1}{x}}{\frac{4}{x^2} - \frac{1}{x}} \quad \text{LCD} = x^2$$

$$= \frac{\frac{x^2}{1} \cdot \frac{2}{x^2} + \frac{x^2}{1} \cdot \frac{1}{x}}{\frac{x^2}{1} \cdot \frac{4}{x^2} - \frac{x^2}{1} \cdot \frac{1}{x}} = \frac{\frac{x^2}{1} \cdot \frac{2}{x^2} + \frac{x^2}{1} \cdot \frac{1}{x}}{\frac{x^2}{1} \cdot \frac{4}{x^2} - \frac{x^2}{1} \cdot \frac{1}{x}} = \frac{2-x}{4-x}$$

Ex: 
$$\frac{\frac{1}{36} - \frac{1}{x^2}}{\frac{1}{6} + \frac{1}{x}} \quad \text{LCD} = 36x^2$$

$$= \frac{\frac{36x^2}{1} \cdot \frac{1}{36} - \frac{36x^2}{1} \cdot \frac{1}{x^2}}{\frac{36x^2}{1} \cdot \frac{1}{6} + \frac{36x^2}{1} \cdot \frac{1}{x}} = \frac{\frac{36x^2}{1} \cdot \frac{1}{36} - \frac{36x^2}{1} \cdot \frac{1}{x^2}}{\frac{36x^2}{1} \cdot \frac{1}{6} + \frac{36x^2}{1} \cdot \frac{1}{x}} = \frac{x^2 - 36}{6x^2 + 36x}$$
$$= \frac{(x+6)(x-6)}{6x(x+6)} = \frac{x-6}{6x}$$

Ex: 
$$\frac{\frac{3}{x^2} + \frac{1}{x}}{2 - \frac{4}{5x}} \quad \text{LCD} = 5x^2$$

$$= \frac{\frac{5x^2}{1} \cdot \frac{3}{x^2} + \frac{5x^2}{1} \cdot \frac{1}{x}}{\frac{5x^2}{1} \cdot \frac{2}{1} - \frac{5x^2}{1} \cdot \frac{4}{5x}} = \frac{\frac{5x^2}{1} \cdot \frac{3}{x^2} + \frac{5x^2}{1} \cdot \frac{1}{x}}{\frac{5x^2}{1} \cdot \frac{2}{1} - \frac{5x^2}{1} \cdot \frac{4}{5x}} = \frac{15 + 5x}{10x^2 - 4x}$$

o.k. to leave.  
ANSWER

$$= \frac{5(3+x)}{2x(5x-2)} = \frac{15+5x}{2x(5x-2)} \leftarrow \text{o.k. to leave the denominator factored}$$

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