

COMPLEX FRACTIONS

Ex 1

$$\frac{\frac{1}{x} + \frac{1}{y}}{\frac{1}{x} - \frac{1}{y}} \cdot \frac{xy}{xy} = \frac{\left(\frac{1}{x} + \frac{1}{y}\right) \cdot xy}{\left(\frac{1}{x} - \frac{1}{y}\right) \cdot xy}$$

LCM FOR TOP: xy

LCM FOR BOTTOM: xy

LCM = (xy)

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$$= \frac{\frac{1}{x} \cdot xy + \frac{1}{y} \cdot xy}{\frac{1}{x} \cdot xy - \frac{1}{y} \cdot xy}$$

$$= \frac{y + x}{y - x}$$

Ex 2

$$\frac{2 - \frac{11}{x} + \frac{15}{x^2}}{3 - \frac{5}{x} - \frac{12}{x^2}}$$

LCM FOR TOP : x^2

LCM FOR BOTTOM : x^2

LCM : x^2

$$\frac{x^2}{x^2} = \frac{\left(2 - \frac{11}{x} + \frac{15}{x^2}\right) \cdot x^2}{\left(3 - \frac{5}{x} - \frac{12}{x^2}\right) \cdot x^2}$$

$$= \frac{2 \cdot x^2 - \frac{11}{x} \cdot x^2 + \frac{15}{x^2} \cdot x^2}{3 \cdot x^2 - \frac{5}{x} \cdot x^2 - \frac{12}{x^2} \cdot x^2}$$

$$= \frac{2x^2 - 11x + 15}{3x^2 - 5x - 12}$$

$$\frac{11 \cdot x^2}{x \cdot 1}$$

$$\underline{2x^2 - 11x + 15}$$

$$P=30 \parallel -6, -5$$

$$S=-11$$

$$\underline{2x^2 - 6x - 5x + 15}$$

$$2x(x-3) - 5(x-3)$$

$$(x-3)(2x-5)$$

$$\underline{3x^2 - 5x - 12}$$

$$P=-36 \parallel -9, 4$$

$$S=-5$$

$$\underline{3x^2 - 9x + 4x - 12}$$

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

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

$$= \frac{(x-3)(2x-5)}{(x-3)(3x+4)}$$

$$= \frac{2x-5}{3x+4}$$

Ex 3

$$\frac{x+1 - \frac{4}{x-2}}{x-4 - \frac{24}{x-2}} \cdot \frac{(x-2)}{(x-2)}$$

$$= \frac{\left(x+1 - \frac{4}{x-2}\right) \cdot (x-2)}{\left(x-4 - \frac{24}{x-2}\right) \cdot (x-2)}$$

$$= \frac{x \cdot (x-2) + 1 \cdot (x-2) - \frac{4}{x-2} \cdot \cancel{(x-2)}}{x \cdot (x-2) - 4 \cdot (x-2) - \frac{24}{x-2} \cdot \cancel{(x-2)}}$$

$$= \frac{x^2 - 2x + x - 2 - 4}{x^2 - 2x - 4x + 8 - 24}$$

$$= \frac{x^2 - x - 6}{x^2 - 6x - 16} = \frac{(x-3)\cancel{(x+2)}}{(x-8)\cancel{(x+2)}}$$

$$= \frac{x-3}{x-8}$$