9-5 Adding and Subtracting Rational Expressions; Complex Fractions

std. 3.0

ex. 1 $\frac{3}{x^2y^3} - \frac{5}{2x^3y}$ LCD: $2x^3y^3$

$\frac{2x}{2x}\cdot\frac{3}{x^2y^3} - \frac{5}{2x^3y}\cdot\frac{y^2}{y^2} = \frac{3(2x)-5(y^2)}{2x^3y^3} = \frac{6x-5y^2}{2x^3y^3}$

ex. 2 $\frac{-2}{x-5} + \frac{10}{x^2-5x}$ LCD: $x(x-5)$

$= \frac{-2(x)+10}{x(x-5)} = \frac{-2(x-5)}{x(x-5)} = -\frac{2}{x}$

ex. 3 $\frac{3x}{x^2+3x+2} - \frac{3x-6}{x^2+4x+4}$ LCD: $(x+2)^2(x+1)$

$= \frac{3x(x+2)-(3x-6)(x+1)}{(x+2)^2(x+1)}$

$= \frac{3x^2+6x-(3x^2-3x-6)}{(x+2)^2(x+1)}$

$= \frac{9x+6}{(x+2)^2(x+1)}$

ex. 4 $\frac{\left(\frac{1}{x^2}-\frac{1}{n^2}\right)}{\left(\frac{1}{x^2}-\frac{1}{xn}-\frac{2}{n^2}\right)}\cdot\frac{x^2n^2}{x^2n^2}$

$= \frac{n^2-x^2}{n^2-xn-2x^2}$

$= \frac{(n+x)(n-x)}{(n-2x)(n+x)} = \frac{n-x}{n-2x}$

ex. 5

$$\frac{\dfrac{1}{x^2-7x+10}+\dfrac{1}{3x-6}}{\dfrac{3}{x-5}}$$

$$= \frac{\left[\dfrac{1}{(x-5)(x-2)}+\dfrac{1}{3(x-2)}\right]3(x-5)(x-2)}{\left(\dfrac{3}{x-5}\right)3(x-5)(x-2)}$$

$$= \frac{3+(x-5)}{9(x-2)}$$

$$= \frac{1x-2}{9(x-2)} = \frac{1}{9}$$