9-5 Adding and Subtracting Rational Expressions; Complex Fractions

std. 3.0

ex. 1 $\frac{3}{x^2y^3} - \frac{5}{2x^3y}$ $\quad 2x \cdot$ $\quad 2x \cdot$

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

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

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

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

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

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

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

ex. 4 $\frac{\left[\frac{1}{x^2}\right] - \left[\frac{1}{n^2}\right]}{\left[\frac{1}{x^2} - \frac{1}{xn} - \frac{2}{n^2}\right]} \cdot \frac{x^2n^2}{x^2n^2}$ $\quad x^2n^2$

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

ex. 5

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

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

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

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