

Adding and Subtracting Rational Expressions

Just like adding and subtracting basic fractions, rational expressions must have the same denominator.

Add or subtract:

$$1) \frac{4y}{x \cdot y} + \frac{3x}{y \cdot x}$$

$$\frac{4y}{xy} + \frac{3x}{xy}$$

$$\frac{3x + 4y}{xy}$$

$$2) \frac{5x}{x \cdot x} - \frac{3}{x^2}$$

$$\frac{5x}{x^2} - \frac{3}{x^2}$$

$$\frac{5x - 3}{x^2}$$

$$3) \frac{(x+4)y}{x \cdot y} + \frac{(x-5)x}{y \cdot x}$$

$$\frac{y(x+4)}{xy} + \frac{x(x-5)}{xy}$$

$$\frac{xy + 4y + x^2 - 5x}{xy}$$

$$\frac{x^2 - 5x + xy + 4y}{xy}$$

$$4) \frac{2(x-2)}{x+1(x-2)} + \frac{3(x+1)}{x-2(x+1)}$$

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

$$\frac{2x-4}{(x+1)(x-2)} + \frac{3x+3}{(x+1)(x-2)}$$

$$\frac{5x-1}{(x+1)(x-2)}$$

$$5) \frac{4}{x^2-9} - \frac{2}{(x+3)^2}$$

* Simplify the denominator

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

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

$$\frac{4x+12}{(x+3)^2(x-3)} - \frac{2x-6}{(x+3)^2(x-3)}$$

$$\frac{4x+12-2x+6}{(x+3)^2(x-3)}$$

$$\frac{2x+18}{(x+3)^2(x-3)}$$