

7.3

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10:53 AM

Adding Rational Expressions w/ Like Denominators

Add rational expressions just like adding fractions

In general

$$\frac{a}{d} + \frac{b}{d} = \frac{a+b}{d} \quad (d \neq 0)$$

$$\text{(ex)} \quad \frac{1}{4} + \frac{2}{4} = \frac{1+2}{4} = \frac{3}{4}$$

$$\text{(ex)} \quad \frac{2x}{5} + \frac{6x}{5} =$$

$$= \frac{8x}{5}$$

$$\text{(ex)} \quad \frac{2x+3}{7x} + \frac{5x+4}{7x} =$$

$$= \frac{2x+3+5x+4}{7x} = \frac{7x+7}{7x}$$

Might need to simplify

$$\text{(ex)} \quad \frac{x^2+24}{3x+9} + \frac{11x}{3x+9} =$$

$$= \frac{x^2+11x+24}{3x+9}$$

$$= \frac{(x+3)(x+8)}{3(x+3)} = \frac{x+8}{3}$$

Subtracting Rational Expressions w/ Like Denominators

Like adding (above) but w/ subtraction

$$\frac{a}{d} - \frac{b}{d} = \frac{a-b}{d} \quad (d \neq 0)$$

$$\text{(ex)} \quad \frac{4x}{9} - \frac{x}{9} = \frac{4x-x}{9} = \frac{3x}{9} = \frac{x}{3}$$

$$\text{(ex)} \quad \frac{4x+7}{18x} - \frac{2x-3}{18x} = \frac{4x+7-(2x-3)}{18x}$$

$$= \frac{4x+7-2x+3}{18x} = \frac{2x+10}{18x}$$

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

Opposite Denominators

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$$\textcircled{\text{ex.}} \frac{6x+5}{x-2} + \frac{4x}{2-x} =$$

$$\frac{6x+5}{x-2} + \frac{4x}{-x+2} = \frac{6x+5}{x-2} + \frac{4x}{-(x-2)}$$

$$= \frac{6x+5}{x-2} - \frac{4x}{x-2}$$

$$= \frac{6x+5-4x}{x-2}$$

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