

Preliminaries and Objectives

Adding Fractions



Preliminaries

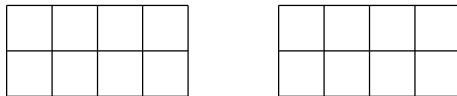
- Multiply polynomials (FOIL)
- Factor polynomials
- Combine like terms
- Reduce fractions

Objectives

- Add fractions and simplify

Adding Fractions

$$\frac{1}{2} + \frac{1}{4} =$$

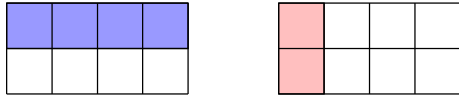


Recap

- Factor denominators
- Supply missing factors to find the Least Common Denominator
- Add fractions by adding the numerators over the common denominator
- Simplify numerator by distributing and combining like terms
- Reduce the fraction by factoring numerator and cancelling common factors

Adding Fractions

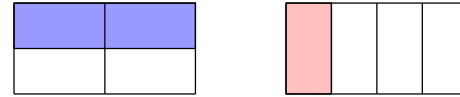
$$\frac{1}{2} + \frac{1}{4} =$$



$$\frac{4}{8} + \frac{2}{8} = \frac{6}{8}$$

Adding Fractions

$$\frac{1}{2} \cdot \frac{2}{2} + \frac{1}{4} = \frac{3}{4}$$



Process

- Factor denominators
- Supply missing factors to find the Least Common Denominator
- Add fractions by adding the numerators over the common denominator
- Simplify numerator by distributing and combining like terms
- Reduce the fraction by factoring numerator and cancelling common factors

Example 1

$$\frac{3}{(x+1)} \cdot \frac{2}{2} + \frac{1}{2} \cdot \frac{(x+1)}{(x+1)} = \frac{6}{2(x+1)} + \frac{x+1}{2(x+1)} = \frac{x+7}{2(x+1)}$$

Example 2

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

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

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

$$\frac{(2x^2 + 3x - 2)}{(x + 1)(x - 1)(x + 2)} + \frac{(2x^2 - 5x + 3)}{(x + 1)(x + 2)(x - 1)} =$$

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

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