

Adding and Subtracting Rational Expressions

Minds On: Simplify!

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

$$\frac{3}{5} + \frac{7}{4}$$

$$\frac{2}{3} + \frac{4}{5}$$

$$\frac{7}{8} - \frac{1}{2}$$

$$\frac{5}{6} - \frac{2}{3}$$

$$\frac{4}{3} - \frac{3}{5}$$

$$\frac{1}{2} + \frac{3}{4} - \frac{1}{5}$$

$$\frac{3}{4} + \frac{5}{3} - \frac{1}{5}$$

$$\frac{3}{7} + \frac{1}{2} - \frac{1}{3}$$

To add and subtract fractions:

1. Find a common multiple of all denominators. (Lowest Common Multiple is best)
2. Rewrite all fractions with the same denominator.
3. Add the numerators.

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

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

$$\frac{1}{8} + \frac{3}{4x^4}$$

To add and subtract rational expressions:

1. Factor.
2. State restrictions. (zeros of the denominators)
3. Find the lowest common denominator (LCD).

The LCD is the product of any common factors and all the unique factors.

The LCD is not always the product of all the denominators.

4. Rewrite each term using the LCD as the denominator.
5. Add or subtract the numerators.
6. Simplify.

Example 1: Simplify and state any restrictions on the variables: $\frac{3}{8x^2} + \frac{1}{4x} - \frac{5}{6x^3}$.

Example 2: Simplify and state any restrictions on the variables: $\frac{3n}{2n+1} + \frac{4}{n-3}$.

Example 3: Simplify and state any restrictions on the variables: $\frac{2t}{t^2-1} - \frac{t+2}{t^2+3t-4}$.