

Adding and Subtracting Algebraic Fractions

Adding and subtracting algebraic fractions requires that the fractions have a common denominator.

 Example

$$\frac{5}{a} - \frac{b}{a} = \frac{5-b}{a}$$

The fractions $\frac{5}{a}$ and $\frac{b}{a}$ already have a common denominator a , so we just subtract the numerators.

 Example

$$\frac{3}{2a} + \frac{3a}{4b} = \frac{6b}{4ab} + \frac{3a^2}{4ab} = \frac{3a^2 + 6b}{4ab}$$

Diagram annotations:
- A red arrow labeled $\times 2b$ points from $\frac{3}{2a}$ to $\frac{6b}{4ab}$.
- A blue arrow labeled $\times a$ points from $\frac{3a}{4b}$ to $\frac{3a^2}{4ab}$.

These fractions **do not** have a common denominator - the first step is to find the LCM of $2a$ and $4b$ and use this as a common denominator.

Once there is a common denominator, add the numerators.