ALGEBRAIC FRACTIONS

Simplifying Algebraic Fractions

We simplify algebraic fractions in the same way that we simplify numerical fractions i.e. divide the numerator and denominator by the highest common factor.

Examples

1) Simplify $\frac{6x}{8x^2}$

The highest common factor of $6x$ and $8x^2$ is $2x$.

Divide the numerator and denominator by $2x$.

$$\frac{6x}{8x^2} = \frac{3}{4x}$$

2) Simplify $\frac{x^2-9}{x^2-2x-3}$

Factorise the numerator and denominator.

$$\frac{x^2-9}{x^2-2x-3} = \frac{(x+3)(x-3)}{(x-3)(x+1)}$$

Divide by the common factor.

$$\frac{x^2-9}{x^2-2x-3} = \frac{(x+3)(x-3)}{(x-3)(x+1)} = \frac{x+3}{x+1}$$

Adding/Subtraction Algebraic Fractions

To add or subtract algebraic fractions we must have a common denominator.

Examples

1) $\frac{3x}{4} + \frac{5y}{3}$

Multiply the first fraction by 3 and the second by 4 to get a common denominator of 12.

$$\frac{3x}{4} + \frac{5y}{3} = \frac{9x}{12} + \frac{20y}{12} = \frac{9x + 20y}{12}$$

2) $\frac{2}{x} - \frac{7}{(x+1)}$

Multiply the first fraction by $(x + 1)$ and the second by x to get a common denominator of $x(x + 1)$.

$$\frac{2(x+1)}{x(x+1)} - \frac{7x}{x(x+1)} = \frac{2(x+1)-7x}{x(x+1)} = \frac{2x+2-7x}{x(x+1)} = \frac{2-5x}{x(x+1)}$$

Multiplying Algebraic Fractions

Multiply the numerators, multiply the denominators, simplify the fraction.

Examples $\frac{3a}{5} \times \frac{a}{6} = \frac{3a^2}{30} = \frac{a^2}{10}$

Dividing Algebraic Fractions

Keep the first fraction as it is, change to multiply and turn the second fraction up-side-down. Follow the rules of multiplication above.

Algebraic Fractions Practice

http://www.mathsisfun.com/algebra/fractions-algebra.html

Revise ALGEBRAIC FRACTIONS. Do the questions at the bottom of the page.

http://www.bbc.co.uk/bitesize/intermediate2/mathematics/mathematics_3/algebra_2/revision/1/

Revise ALGEBRAIC FRACTIONS and try the TESTBITE.

http://www.supermathsworld.com/   Ask your teacher for the login details.

Select ALGEBRA from the menu. Select ALGEBRAIC FRACTIONS. Try on EASY, MEDIUM and HARD level.