

Rational Expression

a fraction of **polynomials**

$$\frac{\text{polynomial}}{\text{polynomial}}$$

$$\frac{3}{2x}$$

$$\frac{4x + 1}{x^2 - 9}$$

$$\frac{2x^2 + 3x - 2}{x^2 - 4x + 6}$$

Anything you do with fraction you can do with **rational expression**, but with **rational expressions** there are more rules to consider.

Dividing Rational Expressions

A **rational expression** can be **divided** by **multiplying by the reciprocal**. After multiplying, rational expressions must be **simplified**.

$$\frac{a \cdot b}{d \cdot e} \div \frac{b}{c}$$

Because we're canceling **common factors**, **factoring** is the key to dividing and simplifying **rational expressions**.

Divide the following rational expressions

$$\frac{4x^3y^2}{x^2y^3} \div \frac{8x^3}{y^2}$$

Divide the following rational expressions

$$\frac{2x^2 - 6x}{x^2 - 2x - 3} \div \frac{x^2 - 3x - 10}{x^2 + 3x + 2}$$

Divide the following rational expressions

$$\frac{x^2 - 4}{x^2 - 6x - 16} \div \frac{x^2 + x - 6}{x^2 - 9x + 8}$$

Divide the following rational expressions

$$\frac{2x^2 - 2}{x^2 + 4x + 3} \div \frac{4x - 20}{x^2 - 2x - 15}$$