

Multiplying Rational Expressions

Rational Expression

a fraction of **polynomials** $\frac{\text{polynomial}}{\text{polynomial}}$

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

$$\frac{x^2 - 4}{2x}$$

$$\frac{27x^3 + 8}{x^2 - x - 20}$$

Rules for multiplying rational expressions

Step: 1 Express **polynomials** in numerator and denominator in factored form.

Step 2: Cancel common factors in numerator and denominator.

Step 3: Multiply remaining factors.

Multiply the following rational expressions

$$\frac{3x^2}{4y^4} \cdot \frac{2xy^2}{3x^4}$$

$$\frac{2x^3}{y^2} \cdot \frac{3xy}{2x^5} \cdot \frac{x^2y^2}{8x^4y}$$

Multiply the following rational expressions

$$\frac{x-2}{x+1} \cdot \frac{3x+3}{5x-10}$$

$$\frac{x-3}{2x+1} \cdot \frac{6x+3}{x^2-9}$$

Multiply the following rational expressions

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

$$\frac{x^2-16}{x^2+x-12} \cdot \frac{x^2-5x+6}{x^2-x-2}$$

Multiply the following rational expressions

$$\frac{x^2 - 6x + 8}{9x^2 - 16} \cdot \frac{3x^2 + 10x + 8}{x^2 - 4}$$