



College Prep Math
Operations with Rational Functions

Today I will...	I'll know I've got it when...	Essential Question...
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Rational Functions and Domain

What is a rational function?

What is the domain of a rational function?

Example 1: Find the domain of each rational function.

A. $f(x) = \frac{x+8}{x-15}$

B. $g(x) = \frac{x^2+4x-12}{3x-6}$

Simplifying, Multiplying, and Dividing Rational Expressions

To simplify, multiply, and divide rational expressions...

Example 2: Simplify each rational expression.

A. $\frac{x^2+4x-12}{3x-6}$

B. $\frac{12+x-x^2}{2x^2-9x+4}$

Example 3: Multiply each rational expression.

A. $\frac{2x^2+x-6}{x^2+4x-5} \cdot \frac{x^3-3x^2+2x}{4x^2-6x}$

B. $\frac{x^2+xy-2y^2}{x^3+x^2y} \cdot \frac{x}{x^2+3xy+2y^2}$

Example 4: Divide each rational expression.

A. $\frac{x^3-8}{x^2-4} \div \frac{x^2+2x+4}{x^3+8}$

B. $\frac{x^2-14x+49}{x^2-49} \div \frac{3x-21}{x+7}$

Adding and Subtracting Rational Expressions

To add or subtract rational expressions...

Example 5: Add or subtract each rational expression.

A. $\frac{x}{x-3} - \frac{2}{3x-4}$

B. $\frac{2}{x^2-x-2} + \frac{10}{x^2+2x-8}$

C. $\frac{3}{x-1} - \frac{2}{x} + \frac{x+3}{x^2-1}$

D. $\frac{2x}{x-5} - \frac{5}{5-x}$

Complex Fractions

What is a complex fraction?

Example 6: Simplify the complex fraction.

A. $\frac{\frac{x+3}{4+2}}{2-\frac{3}{x}}$

B. $\frac{\frac{x^2-1}{x}}{\frac{(x-1)^2}{x}}$