

Rational Functions

What is a rational function?

What is an excluded value?

Step 1. **Factor both numerator and denominator.**

Step 2. **Cross out matching pairs on top and bottom.**

Step 3. **Rewrite the function in simplest terms.**

Ex. Simplify $\frac{42x^5}{35x^2}$

Ex. Simplify $\frac{81x^5y}{18x^2}$

Ex. Simplify $\frac{14x^5 + 6x^2}{4x^2}$

Ex. Simplify $\frac{8x^6 + 16x^4}{24x^5}$

Ex. Simplify $\frac{10x^2 + 16x}{4x^2 - 18x}$

Ex. Simplify $\frac{x^2 + 4x - 60}{3x + 30}$

Ex. Simplify $\frac{x^2 - 6x - 16}{x^2 + x - 20}$

Ex. Simplify $\frac{x^2 - 6x - 16}{x^2 - 64}$

Multiplying Rational Functions

Ex. Simplify $\frac{1}{9x+63} \cdot \frac{9x+90}{x+10}$

Ex. Simplify $\frac{30x-36}{20x-24} \cdot \frac{4}{7x^2}$

Ex. Simplify $\frac{x+1}{x^2-25} \cdot \frac{x^2+4x-60}{x+1}$

Ex. Simplify $\frac{x+2}{x^2-2x-8} \cdot \frac{x^2+3x-28}{x+1}$

Dividing Rational Functions

What do you have to remember about dividing Fractions?

Ex. $\frac{3}{4} \div \frac{7}{6}$

Ex. Simplify $\frac{6x+42}{8x^3-80x^2} \div \frac{x-8}{8x^3-64x^2}$

Ex. Simplify $\frac{x^2+11x+18}{5x+10} \div \frac{14x-8}{35x-20}$

Ex. Simplify $\frac{9x+63}{x^2+3x-28} \div \frac{8x^2}{5x^3-20x^2}$

Ex. Simplify $\frac{x^2-7x+6}{x+8} \div \frac{x^2+7x-8}{x^2+6x-16}$

