

11-2 Worksheet
Simplifying Rational Expressions

Name:

1. Factor each expression then simplify.

A. $\frac{2x^2 + x}{x}$

B. $\frac{6x^2 - 2x}{2x}$

C. $\frac{-m - m^2}{-5m}$

Excluded Values of Rational Expressions The expression $\frac{k}{d^2}$ is an example of a rational expression.

A **rational expression** is an algebraic fraction whose numerator and denominator are polynomials.

Because a rational expression involves division, the denominator may not equal zero. Any values of a variable that result in a denominator of zero must be excluded. These are called **excluded values**.

2. State the excluded value(s) for each rational expression.

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

B. $\frac{x^2 - 5x}{2x + 5}$

C. $\frac{9x^2 + 7x}{(x + 3)(x - 4)}$

Excluded Values and Polynomials The expression $\frac{x^2 - 4}{x^2 + 4x + 3}$ is an example of a rational expression having a polynomial with degree greater than 1. These polynomials must first be factored. Once you have factored the polynomials you get $\frac{x^2 - 4}{x^2 + 4x + 3} = \frac{(x + 2)(x - 2)}{(x + 1)(x + 3)}$. From here you can determine excluded values.

3. Simplify $\frac{x^2 - 4x + 3}{x^2 + 5x + 4}$. Then state the excluded values.