

12.4-12.6: Operations with Rational Expressions Study Guide

12.4: Simplify Rational Expressions:

- Be able to identify excluded values of a rational expression

State the excluded values of each rational expression:

$$\text{Ex: } \frac{8}{x^2+4x-12}$$

$$\text{Ex: } \frac{7x}{x^2-25}$$

- Be able to simplify a rational expression

Simplify:

$$\text{Ex: } \frac{-36x^2}{18x}$$

$$\text{Ex: } \frac{4x-12}{3-x}$$

$$\text{Ex: } \frac{x+3}{x^2+10x+21}$$

12.5: Multiply and Divide Rational Expressions:

Multiply:

$$\text{Ex: } \frac{x^2+4x-12}{x^2+7x+10} \cdot \frac{x+5}{2x-4}$$

$$\text{Ex: } \frac{3x-6}{x^2-x-2} \cdot (x^2 + 6x + 5)$$

Divide:

Ex: $\frac{2x+10}{x^2-25} \div \frac{4x^2}{2x^2-10x}$

Ex: $\frac{x^2+2x-35}{x^2-3x-10} \div \frac{3x^2+21x}{9x+18}$

12.6 Add and Subtract Rational Expressions:

· Be able to add and subtract rational expressions with a common denominator

Add or subtract:

Ex: $\frac{x-5}{x+2} - \frac{x-6}{x+2}$

Ex: $\frac{x+3}{x-9} + \frac{5x}{x-9}$

· Be able to add or subtract rational expressions with unlike denominators

Add or subtract:

Ex: $\frac{8}{3x^3} - \frac{5}{12x}$

Ex: $\frac{x+3}{x-1} + \frac{x+2}{x-1}$

Ex: $\frac{6}{5x^3} + \frac{7}{15x}$

Ex: $\frac{1}{x^2+5x+4} - \frac{1}{x^2-16}$