

MODULE 6: RATIONAL EXPRESSIONS

"DOUBT KILLS MORE DREAMS THAN FAILURE EVER WILL."

5.8 SIMPLIFY RATIONAL EXPRESSIONS

Rational Number: A number that can be written as a _____.

Example:

Is a whole number a rational number? (yes / no) Why?

Example:

Decimals that end, or have a repeating pattern are rational numbers. Decimals that goes on forever are _____ rational.

Example of a decimal that ends:

Example of a decimal with a repeating pattern:

Example of a decimal that goes on forever:

Most radicals are _____ rational, unless they can be simplified.

Example of a radical that does not produce a rational number:

Example of a radical that produces a rational number:

Factor the _____ and _____.

Cancel like terms from the numerator and denominator.

Ex. Simplify $\frac{3x^2-8x-3}{x^2-9}$

Ex. Simplify $\frac{5x}{25x^2-30x}$

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

Ex. Simplify $\frac{x^2+3x+xy+3y}{x^2+5x+6}$

Ex. Simplify $\frac{6x^2-7x-3}{8x^2-6x-9}$

5.9 MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

Multiplying: Simplify _____ & _____.

Dividing: Apply _____, then it becomes a multiplication problem.

Ex. Simplify $\frac{x-2}{x-3} \cdot \frac{x+5}{x^2+3x-10}$

Ex. Simplify $\frac{x-2}{x^2-6x+8} \div \frac{x-3}{x-4}$

Ex. Simplify $\frac{x^5}{y^2} \cdot \frac{y}{x^3}$

Ex. Simplify

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

Ex. Simplify

$$\frac{x^2+5x+6}{x^2-16} \cdot \frac{2x^2+9x+4}{x^2+2x}$$

Ex. Simplify

$$\frac{x^2+3x}{5y^2} \div \frac{2x}{y^2+2y}$$

Ex. Simplify

$$\frac{x^2+3x+2}{x^2-3x} \div \frac{2x^2+5x+2}{x^2-9}$$

5.10 ADD AND SUBTRACT RATIONAL EXPRESSIONS

Add/Subtract Fractions: need to have the same _____.

Ex. Simplify $\frac{x}{3} + \frac{2}{3}$

Ex. Simplify $\frac{x}{5} - \frac{3}{5}$

Ex. Simplify $\frac{2}{x} + \frac{3}{x}$

Ex. Simplify $\frac{y}{7x} - \frac{3}{7x}$

Ex. Simplify $\frac{x+7}{2x^2} + \frac{3}{2x^2}$

Put each expression in the numerator in _____.

Note: Distribute the negative sign in front of the parentheses.

Ex. Simplify $\frac{5x+2}{6y} - \frac{3x+1}{6y}$

If no common denominator, then find the _____.

Look at the neighboring term and determine what is missing.

Whatever you multiply to the bottom, multiply to the _____.

Ex. $\frac{2y}{x} - \frac{5}{y}$

Ex. $\frac{y}{x^2} + \frac{3}{4xy}$

Ex. $\frac{3}{4} + \frac{2}{x}$

Ex. $7 + \frac{3}{2xy}$

Ex. $\frac{3y}{x^5} - \frac{5}{2x^2y}$

Homework Checklist

- Section 5.8 Simplify Rational Expressions*
- Section 5.9 Multiplying and Dividing Rational Expressions*
- Section 5.10 Adding and Subtracting Rational Expressions*