Lesson 5.1: Introduction to Rational Expressions

Explore Your Understanding Assignment

This assignment includes multiple choice and short answer questions. For multiple choice questions, select the best answer. Each is worth 1 mark. Marks assigned to short answer questions are indicated for each question. Be sure to show all necessary work.

(1)_____ 1. The non-permissible value(s) for the rational expression $\frac{3r^2+10r-8}{3r^2+r-2}$ is/are

A. $r \neq -1$

B. $r \neq -1, \frac{2}{3}$

C. $r \neq 1, -\frac{2}{3}$

D. $r \neq \frac{2}{3}$

(1)_____ 2. The simplified form of the rational expression $\frac{10x^3+3x^2-x}{25x^2-1}$ is

A. $\frac{2x^2+x}{5x+1}, x \neq \pm\frac{1}{5}$

B. $\frac{2x^2+x}{5x+1}, x \neq -\frac{1}{5}$

C. $\frac{2x^2+x}{5x-1}, x \neq \pm\frac{1}{5}$

D. $\frac{2x^2+x}{5x-1}, x \neq +\frac{1}{5}$

(2) 3. Simplify the rational expression $\frac{4y^2-4}{6y^2+2y-4}$. Identify any non-permissible values.

(2) 4. Create a rational expression with a variable m that has non-permissible values of 3 and –1.

(3) 5. Speed is determined by dividing the distance travelled by the time taken to travel the distance, or $s = \frac{d}{t}$. Write a rational expression for speed, given the distance travelled is $3p^2 + 5p - 2$ and the time to travel that distance is $3p^2 + 2p - 1$. Identify any non-permissible values.

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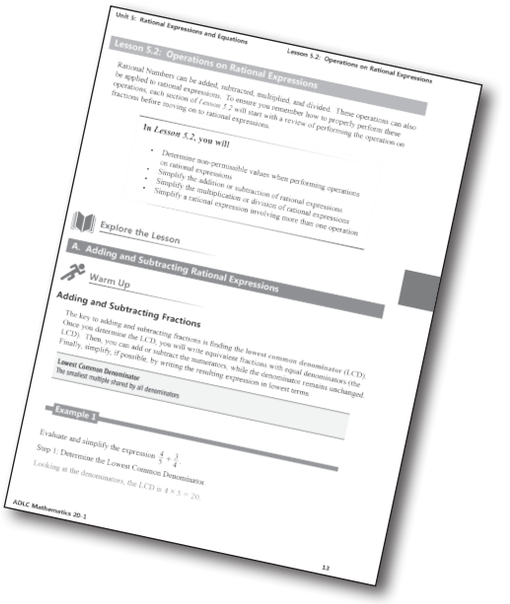
You have completed *Lesson 5.1 Explore Your Understanding Assignment*. Please return to the *Module* and continue your exploration with *Lesson 5.2*.


Unit 5: Rational Expressions and Equations

Lesson 5.2: Operations on Rational Expressions

Lesson 5.2: Operations on Rational Expressions

Rational Numbers can be added, subtracted, multiplied, and divided. Those operations can also be applied to rational expressions. To ensure you remember how to properly perform these operations, each section of *Lesson 5.2* will start with a review of performing the operation on fractions before moving on to rational expressions.

In *Lesson 5.2*, you will

- Determine non-permissible values when performing operations on rational expressions
- Simplify the addition or subtraction of rational expressions.
- Simplify the multiplication or division of rational expressions.
- Simplify a rational expression involving more than one operation.

Explore the Lesson

A. Adding and Subtracting Rational Expressions

Warm Up

Adding and Subtracting Fractions

The key to adding and subtracting fractions is finding the lowest common denominator (LCD). Once you determine the LCD, you will write equivalent fractions with equal denominators (the LCD). Then, you can add or subtract the numerators, while the denominator remains unchanged. Finally, simplify, if possible, by writing the resulting expression in lowest terms.

Lowest Common Denominator
the smallest multiple shared by all denominators

Example 1

Evaluate and simplify the expression $\frac{4}{5}+\frac{3}{4}$.

Step 1: Determine the Lowest Common Denominator.

Looking at the denominators, the LCD is $4 \times 5 = 20$.

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