Lesson 25: Adding and Subtracting Rational Expressions

Classwork

Exercises 1–4

1. Calculate the following sum: .

**Example 1**

Perform the indicated operations below and simplify.



Exercises 5–8

Perform the indicated operations for each problem below.

**Example 2**

Simplify the following expression.

Lesson Summary

In this lesson, we extended addition and subtraction of rational numbers to addition and subtraction of rational expressions. The process for adding or subtracting rational expressions can be summarized as follows:

* Find a common multiple of the denominators to use as a common denominator.
* Find equivalent rational expressions for each expression using the common denominator.
* Add or subtract the numerators as indicated and simplify if needed.

Problem Set

1. Write each sum or difference as a single rational expression.
2. Write as a single rational expression.

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1. Simplify the following expressions.

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EXTENSION:

1. Suppose that and We know from our work in this section that is equivalent to Is it also true that is equivalent to ? Provide evidence to support your answer.
2. Suppose that and . Show that the value of does not depend on the value of
3. Show that for any real numbers and , and any integers and so that , , , and ,
4. Suppose that is a positive integer.
   1. Simplify the expression .
   2. Simplify the expression .
   3. Simplify the expression .
   4. If this pattern continues, what is the product of of these factors?