Adding And Subtracting Rational Algebraic Expressions Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is a rational algebraic expression?

undefined. A) A fraction with integers in the numerator and denominator
undefined. B) A fraction with polynomials in the numerator and denominator ✓
undefined. C) A polynomial with a single variable
undefined. D) A polynomial with no variables

A rational algebraic expression is a fraction with polynomials in the numerator and denominator.

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A rational algebraic expression is a fraction with polynomials in the numerator and denominator.

Which of the following are examples of rational algebraic expressions? (Select all that apply)

undefined. A) \(\frac{x^2 + 3x + 2}{x - 1} \) ✓

undefined. B) \(x^2 + 3x + 2 \)

undefined. C) \(\frac{5}{x + 2} \) ✓

undefined. D) \(\frac{3x + 1}{2x^2 - 5x + 3} \) ✓

Examples of rational algebraic expressions include fractions with polynomials in the numerator and denominator.

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Examples include fractions with polynomials in both the numerator and denominator.

Which of the following are examples of rational algebraic expressions? (Select all that apply)

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Examples include fractions where both the numerator and denominator are polynomials.

Explain the process of finding a common denominator when adding rational expressions.

Finding a common denominator involves identifying the least common multiple of the denominators.

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Part 2: comprehension

Why is it necessary to find a common denominator when adding or subtracti ng rational expressions?

undefined. A) To make the numerators equal

undefined. B) To simplify the expressions

undefined. C) To ensure the denominators are the same for accurate addition or subtraction ✓

undefined. D) To factor the expressions

Finding a common denominator ensures that the denominators are the same for accurate addition or subtraction.

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A common denominator is necessary to ensure the denominators are the same for accurate addition or subtraction.

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A common denominator ensures that the fractions can be accurately added or subtracted.

Which of the following statements are true about simplifying rational expressions? (Select all that apply)

undefined. A) You can cancel terms in the numerator and denominator without factoring.

undefined. **B) You must factor both the numerator and the denominator before cancel ing common factors.** ✓

undefined. C) Simplifying involves only adding or subtract ing the numerators.

undefined. D) Simplifying can change the expression's value.

True statements include the necessity of factoring before cancelation.

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True statements involve the necessity of factoring before cancelation.

Describe how factoring polynomials aids in simplifying rational expressions.

Factoring polynomials allows for the identification and cancelation of common factors, simplifying the expression.

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Describe how factoring polynomials aids in simplifying rational expressions.

Factoring polynomials allows for the identification and cancelation of common factors in rational expressions.

Part 3: Application and Analysis

What is the least common denominator of \(\frac{1}{x^2 - 1} \) and \(\frac{2}{x + 1} \)?

undefined. A) \(x^2 - 1 \)
undefined. B) \(x + 1 \)
undefined. C) \((x - 1)(x + 1) \) ✓
undefined. D) \(x^2 + 1 \)

The least common denominator is \((x - 1)(x + 1) \).

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The least common denominator is the product of the unique factors of both denominators.

Given \(\frac{3}{x + 2} + \frac{5}{x - 2} \), what steps are necessary to add these expressions? (Select all that apply)

undefined. A) Find the least common denominator ✓
undefined. B) Add the numerators directly
undefined. C) Rewrite each fraction with the common denominator ✓

undefined. D) Simplify the resulting expression ✓

Necessary steps include finding the least common denominator and rewriting each fraction.

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Necessary steps include finding the least common denominator and rewriting each fraction.

Solve the following: \(\frac{2x}{x^2 - 4} + \frac{3}{x + 2} \).

To solve, find a common denominator and combine the fractions.

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To solve, find a common denominator and combine the fractions.

Which expression is equivalent to \(\frac{x^2 - 4}{x^2 - 1} \) after simplification?

undefined. A) \(\frac{x - 2}{x - 1} \)
undefined. B) \(\frac{x + 2}{x + 1} \)
undefined. C) \(\frac{(x - 2)(x + 2)}{(x - 1)(x + 1)} \) ✓
undefined. D) \(\frac{x + 2}{x - 1} \)

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The equivalent expression can be found by factoring and cancelation.

Part 4: Evaluation and Creation

After simplifying \(\frac{x^2 - 1}{x^2 + 2x + 1} \), what conclusion can be drawn about the expression?

undefined. A) It simplifies to 1
undefined. B) It simplifies to \(\frac{x - 1}{x + 1} \) ✓
undefined. C) It simplifies to \(\frac{x + 1}{x - 1} \)
undefined. D) It cannot be simplified

The expression simplifies to \(\frac{x - 1}{x + 1} \).

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The expression simplifies to \(\frac{x - 1}{x + 1} \).

Evaluate the expression \(\frac{x^2 - 4}{x^2 - 4x + 4} \) and determine which of the following are correct? (Select all that apply)

undefined. A) The expression is undefined for \(x = 2 \). ✓

undefined. B) The expression simplifies to \(\frac{x + 2}{x - 2} \).

undefined. C) The expression is a rational function. ✓

undefined. D) The expression has a hole at \(x = 2 \). ✓

The expression is undefined for certain values of x and simplifies to a rational function.

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The expression is undefined for \(x = 2 \) and simplifies to a rational function.

Create a real-world scenario where adding or subtractin rational expressions would be necessary, and solve it.

A real-world scenario could involve combining rates of work or speed.

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A real-world scenario could involve combining rates of work or proportions of mixtures.

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