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Rational Expressions Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is a rational expression?

undefined. A) A fraction with a constant numerator and denominator

undefined. B) A fraction where the numerator and the denominator are polynomials ✓

undefined. C) A polynomial with no fractions

undefined. D) A number divided by zero

A rational expression is a fraction where the numerator and the denominator are polynomials.

Which of the following are components of a rational expression?

undefined. A) Numerator ✓

undefined. B) Denominator ✓

undefined. C) Exponent

undefined. D) Coefficient

The components of a rational expression include the numerator and the denominator.

Explain why it is important to identify the domain of a rational expression.

Identifying the domain is crucial because it helps to determine the values for which the rational expression is defined and avoids division by zero.

List two methods used to simplify rational expressions.

1. Method 1

Factoring

2. Method 2

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Cancelation of common factors

Two common methods to simplify rational expressions are factoring the numerator and denominator and cancelation of common factors.

What is the first step in simplifying the rational expression $\frac{x^2 - 9}{x^2 - 3x}$?

undefined. A) Multiply the numerator and denominator

undefined. B) Add 3 to both the numerator and denominator

undefined. C) Factor both the numerator and the denominator ✓

undefined. D) Divide the numerator by the denominator

The first step is to factor both the numerator and the denominator.

Part 2: Application and Analysis

What is the simplified form of $\frac{2x^2 + 4x}{4x}$?

undefined. A) $(x + 2)$ ✓

undefined. B) $2x + 4$

undefined. C) $\frac{x}{2} + 1$

undefined. D) $(x + 1)$

The simplified form is $(x + 2)$.

When solving the equation $\frac{x}{x+2} = \frac{3}{x-2}$, which steps are necessary?

undefined. A) Cross-multiply ✓

undefined. B) Add 2 to both sides

undefined. C) Find a common denominator

undefined. D) Factor the numerators

Necessary steps include cross-multiplying to eliminate the fractions.

Solve the rational equation $\frac{3}{x} = \frac{6}{x+2}$ and explain your steps.

To solve, cross-multiply and then isolate x to find the solution.

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If $\frac{x+1}{x-1} = \frac{2}{3}$, what is the value of x?

undefined. A) 1

undefined. B) 3 ✓

undefined. C) 5

undefined. D) 7

The value of x is 3.

Which of the following statements are true about the expression $\frac{x^2 - 4}{x^2 - x - 6}$?

undefined. A) It can be simplified by factoring ✓

undefined. B) The domain excludes $x = 2$ ✓

undefined. C) The domain excludes $x = -3$ ✓

undefined. D) It is already in its simplest form

The expression can be simplified by factoring, and the domain excludes x = 2 and x = -3.

Part 3: Evaluation and Creation

Which of the following rational expressions is equivalent to $\frac{x^2 - 4x + 4}{x^2 - 2x}$?

undefined. A) $\frac{x-2}{x}$ ✓

undefined. B) $\frac{x-2}{x-1}$

undefined. C) $\frac{x}{x-2}$

undefined. D) $\frac{x+2}{x-2}$

The equivalent expression is $\frac{x-2}{x}$.

Evaluate the following expressions and determine which are equivalent to $\frac{x^2 - 9}{x^2 - 3x}$.

undefined. A) $\frac{x+3}{x}$

undefined. B) $\frac{x-3}{x}$

undefined. C) $\frac{x+3}{x-3}$ ✓

undefined. D) $\frac{x-3}{x-3}$ ✓

The equivalent expressions include $\frac{x+3}{x-3}$ and $\frac{x-3}{x-3}$.

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Create a real-world problem that can be modeled using the rational expression $\frac{d}{t}$, where d is distance and t is time. Describe the scenario and how the expression is used.

A real-world problem could involve calculating speed, where distance is divided by time to find the rate.

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