

Adding And Subtracting Rational Algebraic Expressions Worksheet

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Part 1: Building a Foundation

What is a rational algebraic expression?
Hint: Think about the definition involving fractions and polynomials.
 A) A fraction with integers in the numerator and denominator B) A fraction with polynomials in the numerator and denominator C) A polynomial with a single variable D) A polynomial with no variables
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Which of the following are examples of rational algebraic expressions? (Select all that apply)
Hint: Look for fractions that have polynomials in both the numerator and denominator.
\Box A) \(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

□ B) \(x^2 + 3x + 2 \)□ C) \(\frac{5}{x + 2} \)
Which of the following are examples of rational algebraic expressions? (Select all that apply)
Hint: Look for fractions involving polynomials.
 A) \(\frac{x^2 + 3x + 2}{x - 1}\) B) \(x^2 + 3x + 2\) C) \(\frac{5}{x + 2}\)
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Hint: Look for fractions involving polynomials.
 A) \(\frac{x^2 + 3x + 2}{x - 1}\) B) \(x^2 + 3x + 2\) C) \(\frac{5}{x + 2}\) D) \(\frac{3x + 1}{2x^2 - 5x + 3}\)
Explain the process of finding a common denominator when adding rational expressions.
Hint: Consider the factors of the denominators involved.

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Part 2: comprehension	
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Why is it necessary to find a common denominator when adding or subtracti ng rational expressions?	
Hint: Consider the role of denominators in addition and subtraction.	
○ A) To make the numerators equal	
B) To simplify the expressions	
C) To ensure the denominators are the same for accurate addition or subtraction	
O) To factor the expressions	
Why is it necessary to find a common denominator when adding or subtracti ng rational expressions?	
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 A) To make the numerators equal B) To simplify the expressions C) To ensure the denominators are the same for accurate addition or subtraction D) To factor the expressions
Which of the following statements are true about simplifying rational expressions? (Select all that apply)
Hint: Think about the rules of cancelation and factoring.
 A) You can cancel terms in the numerator and denominator without factoring. B) You must factor both the numerator and the denominator before cancel ing common factors. C) Simplifying involves only adding or subtract ing the numerators. D) Simplifying can change the expression's value.
Which of the following statements are true about simplifying rational expressions? (Select all that apply)
Hint: Consider the rules of simplification.
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Describe how factoring polynomials aids in simplifying rational expressions.

Hint: Consider the relationship between factors and simplification.



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Part 3: Application and Analysis	
What is the least common denominator of $\ (\frac{1}{x^2 - 1}) $ and $\ (\frac{2}{x + 1})$?	?
Hint: Think about the factors of the denominators.	
○ A) \(x^2 - 1 \)	
○ B) \(x + 1 \)	
○ C) \((x - 1)(x + 1) \)	



○ D) \(x^2 + 1 \)
What is the least common denominator of \(\frac{1}{x^2 - 1} \) and \(\frac{2}{x + 1} \)?
Hint: Consider the factors of each denominator.
○ A) \(x^2 - 1 \)
○ B) \(x + 1 \)
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○ D) \(x^2 + 1 \)
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○ D) \(x^2 + 1 \)
Given \(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Hint: Consider the process of adding fractions.
A) Find the least common denominator
☐ B) Add the numerators directly
C) Rewrite each fraction with the common denominator
D) Simplify the resulting expression
Given \(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Hint: Think about the process of addition.
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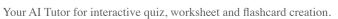


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Solve the following: $\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	
Hint: Consider factoring the denominators.	
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Solve the following: $\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	
Hint: Consider factoring the denominators first.	
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Solve the following: $\ (\frac{2x}{x^2 - 4} + \frac{3}{x + 2} \).$	
Hint: Consider factoring the denominators.	
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Which expression is equivalent to \(\frac $\{x^2 - 4\}\{x^2 - 1\} \$ \) after simplification?

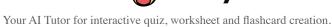


Hint: Think about factoring both the numerator and denominator. ○ A) \(\frac{x - 2}{x - 1} \) ○ B) \(\frac{x + 2}{x + 1} \) ○ C) \(\frac{(x - 2)(x + 2)}{(x - 1)(x + 1)} \) ○ D) \(\frac{x + 2}{x - 1} \)
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Which expression is equivalent to $\ (\ \frac{x^2 - 4}{x^2 - 1} \)$ after simplification?
Hint: Think about factoring both the numerator and denominator.
 A) \(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Part 4: Evaluation and Creation
After simplifying \(\frac{ $x^2 - 1}{x^2 + 2x + 1} \), what conclusion can be drawn about the expression?$
Hint: Consider the result of the simplification.
 ○ A) It simplifies to 1 ○ B) It simplifies to \(\frac{x - 1}{x + 1}\) ○ C) It simplifies to \(\frac{x + 1}{x - 1}\) ○ D) It cannot be simplified
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Evaluate the expression \(\frac{x^2 - 4}{x^2 - 4x + 4}\) and determine which of the following are correct? (Select all that apply)
Hint: Consider the values that make the expression undefined.
\square A) The expression is undefined for \(x = 2 \).
\square B) The expression simplifies to \(\\frac{x + 2}{x - 2}\\).
C) The expression is a rational function.
D) The expression has a hole at \(x = 2 \).
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C) The expression is a rational function.
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Create a real-world scenario where adding or subtractin rational expressions would be necessary, and solve it.		
Hint: Think about situations involving rates or ratios.		
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