Questions: Arithmetic on algebraic fractions

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Summary

A selection of questions for the study guide on arithmetic on algebraic fractions.

Before attempting these questions, it is highly recommended that you read Guide: Arithmetic on algebraic fractions.

Q1

Calculate the following additions and subtractions by first finding a common denominator. Write your answer in its simplest form. Assume that all denominators are non-zero.

1.1. $\frac{2}{x} + \frac{5}{x}$

1.2. $\frac{x+1}{3} + \frac{x-2}{3}$

1.3. $\frac{4}{y} - \frac{1}{y}$

1.4. $\frac{3}{4x} + \frac{1}{4x}$

1.5. $\frac{x-3}{5} - \frac{x+2}{5}$

1.6. $\frac{1}{x} + \frac{1}{2x}$

1.7. $\frac{3}{5y} - \frac{2}{15y}$

1.8. $\frac{x}{3} + \frac{x}{6}$

1.9. $\frac{2}{x} + \frac{3}{x+1}$

1.10. $\frac{x+4}{x-1} - \frac{x-2}{x-1}$

1.11. $\frac{5}{x-3} + \frac{2}{2x-6}$

1.12. $\frac{2}{x+2} - \frac{1}{x-2}$

1.13. $\dfrac{x+1}{x^2}+\dfrac{2}{x}$

1.14. $\dfrac{3x}{x^2-9}+\dfrac{2x}{x+3}$

1.15. $\dfrac{x-1}{x+2}-\dfrac{2x+3}{x^2+4x+4}$

Q2

Calculate the following multiplications. Write your answer in its simplest form. Assume that all denominators are non-zero.

2.1. $\dfrac{x}{3}\cdot\dfrac{2}{5}$

2.2. $\dfrac{3a}{4}\cdot\dfrac{8}{a}$

2.3. $\dfrac{x+1}{2}\cdot\dfrac{x}{3}$

2.4. $\dfrac{5y}{2x}\cdot\dfrac{3x}{10y}$

2.5. $\dfrac{x-3}{x}\cdot\dfrac{x}{4}$

2.6. $-\dfrac{2x}{5}\cdot\dfrac{15}{x^2}$

2.7. $\dfrac{x^2-9}{x+3}\cdot\dfrac{x}{2x-6}$

2.8. $\dfrac{x+2}{x-1}\cdot\dfrac{x-1}{x+3}$

2.9. $\dfrac{3x}{x^2+2x}\cdot\dfrac{x+2}{4}$

2.10. $\dfrac{x^2+5x+6}{x+1}\cdot\dfrac{1}{x+2}$

2.11. $-\dfrac{x-4}{2x}\cdot\dfrac{3x}{x-4}$

2.12. $\dfrac{2x}{x^2-4}\cdot\dfrac{x+2}{3}$

Q3

Calculate the following divisions. Write your answer in its simplest form. Assume that all denominators are non-zero.

3.1. $\dfrac{x}{2}\div\dfrac{x}{5}$

3.2. $\frac{3}{x} \div \frac{1}{2x}$

3.3. $\frac{x+1}{4} \div \frac{x+1}{2}$

3.4. $\frac{2x}{3y} \div \frac{4}{9y}$

3.5. $\frac{x-2}{x} \div \frac{3}{4}$

3.6. $\frac{x^2-1}{x+1} \div x$

3.7. $-\frac{3x}{5} \div \frac{x}{10}$

3.8. $\frac{x^2+3x}{x} \div \frac{x+3}{2}$

3.9. $\frac{x}{x-4} \div \frac{2x}{x-4}$

3.10. $\frac{x^2-9}{x^2-3x} \div \frac{x-3}{x}$

3.11. $\frac{2x}{x+2} \div \frac{x}{x+2}$

3.12. $\frac{x^2-4}{2x} \div \frac{x-2}{3}$

Q4

Simplify the following compound algebraic fractions. Write your answer in its simplest form. Assume that all denominators are non-zero.

4.1. $\dfrac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{x}}$

4.2. $\dfrac{-\frac{2x}{3}}{\frac{x+2}{9}}$

4.3. $\dfrac{\frac{x}{x-1}}{\frac{2x}{x-1}}$

4.4. $\dfrac{\frac{1}{x}+\frac{2}{x^2}}{\frac{3}{x}}$

4.5. $\dfrac{\dfrac{x+1}{2x}}{-\dfrac{x-1}{4x^2}}$

After attempting the questions above, please click this link to find the answers.

Version history and licensing

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