



In this worksheet you will learn to perform addition, subtraction, multiplication and division with algebraic fractions. Work carefully, showing all your steps. Remember that when adding or subtracting fractions you must have a common denominator; when multiplying, multiply numerators and denominators respectively; and when dividing, multiply by the reciprocal.

Easy Questions

1. Write and simplify $\frac{1}{x} + \frac{2}{x}$.
2. Write and simplify $\frac{3}{y} - \frac{1}{y}$.
3. Write and simplify $\frac{2}{x} \times \frac{3}{4}$.
4. Write and simplify $\frac{5}{a} \div \frac{1}{a}$.
5. Write and simplify $\frac{1}{3x} + \frac{2}{3x} - \frac{1}{3x}$.

Intermediate Questions

6. Write and simplify $\frac{1}{2x} + \frac{3}{4x}$.
7. Write and simplify $\frac{5}{x+2} - \frac{2}{x+2}$.
8. Write and simplify $\frac{x}{2} \times \frac{4}{x^2}$.
9. Write and simplify $\frac{3x}{4} \div \frac{6}{x}$.
10. Write and simplify $\frac{1}{x} + \frac{2}{y}$.
11. Write and simplify $\frac{2}{x} \times \frac{3}{y} + \frac{4}{x} \times \frac{5}{y}$.
12. Write and simplify $\frac{6}{a+1} - \frac{2}{a+1}$.

13. Write and simplify $\frac{2x}{a} \times \frac{3a}{4x^2}$.
14. Write and simplify $\frac{x+1}{2} \div \frac{x-1}{4}$.
15. Write and simplify $\frac{1}{x} + \frac{1}{y} - \frac{x+y}{xy}$.
16. Write and simplify $\frac{1}{2x} + \frac{3}{x} - \frac{2}{x}$.
17. Write and simplify $\frac{x+2}{x} \times \frac{2x}{x+2}$.
18. Write and simplify $\frac{4x}{x-3} \div \frac{2x}{x-3}$.
19. Write and simplify $\frac{1}{x} + \frac{1}{x+1}$.
20. Write and simplify $\frac{2}{x} - \frac{3}{x+2} + \frac{1}{x(x+2)}$.

Hard Questions

21. Write and simplify $\frac{x}{x-1} + \frac{2}{x-1} - \frac{3}{x-1}$.
22. Write and simplify $\frac{2}{x} \times \frac{3}{x-1} \div \frac{4}{x(x-1)}$.
23. Write and simplify $\frac{1}{x} + \left(\frac{2}{x+1} \div \frac{3}{x(x+1)} \right)$.
24. Write and simplify $\frac{1}{x} - \left(\frac{1}{x+2} \div \frac{2}{x^2+2x} \right)$.
25. Write and simplify $\frac{2}{x+1} + \frac{3}{x-1} - \frac{5x}{x^2-1}$.
26. Write and simplify $\frac{1}{x} + \left(\frac{1}{y} \div \frac{1}{xy} \right)$.
27. Write and simplify $\frac{x-1}{x+1} \div \frac{x^2-1}{x}$.
28. Write and simplify $\left(\frac{3}{x+2} - \frac{1}{x} \right) \div \frac{2x+4}{x^2+2x}$.
29. Write and simplify $\frac{2}{x} - \frac{3}{x+1} + \frac{1}{x(x+1)}$.
30. Write and simplify $\frac{x}{x-2} + \frac{2}{x} - \frac{3}{x(x-2)}$.