ILLAWARRA TUTORING

This worksheet will help you to perform addition, subtraction, multiplication, and division with algebraic fractions confidently. You will simplify expressions by finding common denominators, factorising where necessary, and cancelling common factors.

Easy Questions

1. Instruction: Simplify $\frac{3x}{4} \times \frac{8}{9x}$.
2. Instruction: Simplify $\frac{5}{2x} \div \frac{10}{3x}$.
3. Instruction: Simplify $\frac{1}{x} + \frac{2}{x}$.
4. Instruction: Simplify $\frac{3}{x} - \frac{1}{x}$.
5. Instruction: Simplify $\frac{2}{x+1} \times \frac{3}{x+1}$.

Intermediate Questions

6. Instruction: Simplify $\frac{1}{x} + \frac{1}{x+2}$.
7. Instruction: Simplify $\frac{2}{x-1} - \frac{3}{x+1}$.
8. Instruction: Simplify $\frac{3x}{x^2-1} \times \frac{x-1}{2x}$.
9. Instruction: Simplify $\frac{4x}{x^2-4} \div \frac{2}{x+2}$.
10. Instruction: Simplify $\frac{5}{2(x+3)} + \frac{3}{4(x+3)}$.
11. Instruction: Simplify $\frac{1}{x+2} - \frac{2}{x}$.
12. Instruction: Simplify $\frac{x+2}{x-2} \times \frac{x-2}{x+3}$.
13. Instruction: Simplify $\frac{x^2-1}{x+2} \div \frac{x+1}{x^2-4}$.

14. Instruction: Simplify $\dfrac{2}{x+1} + \dfrac{3}{x-1}$.

15. Instruction: Simplify $\dfrac{x^2-4}{x} \times \dfrac{x}{x+2}$.

16. Instruction: Simplify $\dfrac{x^2-9}{x+3} \div \dfrac{x^2-4}{x-2}$.

17. Instruction: Simplify $\dfrac{1}{x} + \dfrac{2}{x^2}$.

18. Instruction: Simplify $\dfrac{3x^2}{x^2-9} \times \dfrac{x+3}{2x}$.

19. Instruction: Simplify $\dfrac{4x^2}{x^2-1} \div \dfrac{2x}{x-1}$.

20. Instruction: Simplify $\dfrac{1}{x^2-1} + \dfrac{1}{x+1}$.

Hard Questions

21. Instruction: Simplify $\dfrac{2}{x} + \dfrac{3}{x+1} - \dfrac{1}{x(x+1)}$.

22. Instruction: Simplify $\dfrac{x^2-4}{x^2-1} \times \dfrac{x+1}{x-2}$.

23. Instruction: Simplify $\left(\dfrac{1}{x} + \dfrac{2}{x+2}\right) \div \left(\dfrac{3}{x} - \dfrac{1}{x+2}\right)$.

24. Instruction: Simplify $\dfrac{1}{x-2} + \dfrac{2}{x+2} - \dfrac{3}{x^2-4}$.

25. Instruction: Simplify $\dfrac{x^2-9}{x^2-x-12} \times \dfrac{x^2+5x+6}{x^2-4}$.

26. Instruction: Simplify $\dfrac{2x^2-8}{x^2-4} \div \dfrac{x^2-2x}{2x-4}$.

27. Instruction: Simplify $\left(\dfrac{x}{x-1} - \dfrac{1}{x}\right) \div \left(\dfrac{1}{x-1} + \dfrac{1}{x}\right)$.

28. Instruction: Simplify $\dfrac{1}{x+2} \times \dfrac{x^2-4}{x-2} - \dfrac{2x}{x^2-4}$.

29. Instruction: Simplify $\dfrac{2}{x} + \dfrac{3}{x^2} - \dfrac{5}{x^3}$.

30. Instruction: Simplify $\dfrac{x^2}{x-1} \div \dfrac{x^2-1}{x}$.