ILLAWARRA TUTORING

In this worksheet you will apply substitution and elimination techniques to solve systems of linear equations. You are required to show all your working for each question.

Easy Questions

1. Solve the following system using substitution:
$$2x + 3y = 8, \quad x - y = 1.$$

2. Solve the system:
$$x + y = 5, \quad x - y = 1.$$

3. Solve for x and y:
$$3x + y = 7, \quad 2x - y = 1.$$

4. Solve the system by elimination:
$$4x + 2y = 12, \quad 2x + y = 6.$$

5. Solve for the variables:
$$x + 2y = 10, \quad 3x - y = 5.$$

Intermediate Questions

6. Solve the system:
$$3(x - y) = 6, \quad x + 2y = 5.$$

7. Solve:
$$2x + 3y = 13, \quad 4x - y = 5.$$

8. Solve the system:
$$\frac{x}{2} + \frac{y}{3} = 5, \quad \frac{x}{3} - \frac{y}{2} = -1.$$

9. Solve for x and y:
$$5x - 2y = 4, \quad 3x + y = 7.$$

10. Solve:
$$6x + 4y = 20, \quad 3x - 2y = 1.$$

11. Solve:
$$4x - y = 3, \quad 2x + 3y = 12.$$

12. Solve the system:
$$-x + 2y = 4, \quad 3x - y = -2.$$

13. Solve:
$$3x + 2y = 8, \quad 2x - y = 1.$$

14. Solve for the variables:
$$7x + 3y = 10, \quad x - 2y = -1.$$

15. Solve the system:
$$2(x + y) = 10, \quad 3x + 4y = 18.$$

16. Solve:
$$2x - 3y = -1, \quad -x + y = 2.$$

17. Solve:
$$5x + y = 16, \quad 2x - 3y = -7.$$

18. Solve:
$$3(2x - y) = 12, \quad x + 4y = 14.$$

19. Solve the system:
$$x + 5y = 20, \quad 2x - y = 3.$$

20. Solve:
$$4x + y = 9, \quad -2x + 3y = 5.$$

Hard Questions

21. Solve the system:
$$\frac{1}{2}x + \frac{1}{3}y = \frac{5}{6}, \quad \frac{2}{3}x - \frac{1}{4}y = \frac{1}{2}.$$

22. Solve for x and y:
$$3x + 2y = 11, \quad 4x - 5y = -2.$$

23. Solve the system:
$$2(x + y) + x = 14, \quad 3(x - y) = 6.$$

24. Solve:
$$x - y + 2(x + 2y) = 20, \quad 3x + y - (x - y) = 10.$$

25. Solve:
$$5x + 2y = 12, \quad 3\left(x - \frac{y}{2}\right) = 6.$$

26. Solve:
$$2(3x - 2y) = 10, \quad 4x + y = 9.$$

27. Solve the system:
$$\frac{x + 2y}{3} = 4, \quad \frac{2x - y}{2} = 3.$$

28. Solve and state the nature of the solution:

$$2x + 3y = 7, \quad 4x + 6y = 14.$$

29. Solve and determine the nature of the solution:

$$3x + 4y = 10, \quad 6x + 8y = 18.$$

30. Solve the system:

$$7x - 5y = 1, \quad 5x + 2y = 9.$$