

## Exercise 2.8

Solve the following sets of linear equations.

$$\begin{aligned} 1. \quad & 3x - 4y + z = -2 \\ & -2x + y + 3z = 9 \\ & x + 3y - 2z = 1 \end{aligned}$$

$$\begin{aligned} 3. \quad & 4x + y + z = 1 \\ & 2x - 3y + 6z = -2 \\ & 6x + 2y + 5z = -1 \end{aligned}$$

$$\begin{aligned} 2. \quad & x + 4y + 2z = 4 \\ & 3x - y + z = 0 \\ & 4x + 2y + 3z = 5 \end{aligned}$$

$$\begin{aligned} 4. \quad & 3x - 2y + 3z = 6 \\ & 7x + 3y - 5z = -5 \\ & 4x - y - z = 1 \end{aligned}$$

Solve the following pairs of simultaneous equations.

$$\begin{aligned} 5. \quad & 2x + y = 1 \\ & 3x^2 + 2xy + y^2 = 9 \end{aligned}$$

$$\begin{aligned} 7. \quad & 5x + 3y = 10 \\ & 2x^2 - 13xy - 3y^2 = -8 \end{aligned}$$

$$\begin{aligned} 6. \quad & 3x + 2y = -4 \\ & 3x^2 + xy - 4y^2 = 6 \end{aligned}$$

Solve the following simultaneous quadratic equations.

$$\begin{aligned} 8. \quad & x^2 + 2xy + 3y^2 = 17 \\ & 2x^2 - xy + y^2 = 4 \end{aligned}$$

$$\begin{aligned} 10. \quad & 2x^2 + xy - 2y^2 = -2 \\ & x^2 - 3xy - 5y^2 = 5 \end{aligned}$$

$$\begin{aligned} 9. \quad & 2x^2 - 4xy - 3y^2 = 5 \\ & 3x^2 + 5xy + 4y^2 = 18 \end{aligned}$$

11. Solve the following simultaneous equations

$$\frac{x + 2y - 1}{3} = \frac{2x - y + 7}{4} = \frac{3x + 2y - 3}{5} = z$$

for  $x$ ,  $y$  and  $z$ .

Solve the following simultaneous equations.

$$\begin{aligned} 12. \quad & x^3 - y^3 = 35 \\ & x - y = 5 \end{aligned}$$

$$\begin{aligned} 13. \quad & x^2 + y^2 = 20 \\ & 2x^2 - xy + y^2 = 32 \end{aligned}$$

## Exercise 2.8

$$1. \quad x = 1, y = 2, z = 3$$

$$2. \quad x = -2, y = -1, z = 5$$

$$3. \quad x = \frac{1}{2}, y = -\frac{1}{3}, z = -\frac{2}{3}$$

$$4. \quad x = \frac{2}{5}, y = -\frac{3}{5}, z = \frac{6}{5}$$

$$5. \quad x = 2, y = -3; x = -\frac{4}{3}, y = \frac{11}{3}$$

$$6. \quad x = -2, y = 1; x = -\frac{22}{15}, y = \frac{1}{5}$$

$$7. \quad x = -1, y = 5; x = \frac{38}{23}, y = \frac{40}{69}$$

$$8. \quad x = \pm 1, y = \pm 2; x = \pm \frac{1}{\sqrt{2}}, y = \pm \frac{3}{\sqrt{2}}$$

$$9. \quad x = \pm 2, y = \mp 3; x = \pm \frac{37}{\sqrt{311}}, y = \pm \frac{7}{\sqrt{311}}$$

$$10. \quad x = \pm 5, y = \mp 4$$

$$11. \quad x = 4, y = 3, z = 3$$

$$12. \quad x = 3, y = -2; x = 2, y = -3$$

$$13. \quad x = \pm 2, y = \mp 4; x = \pm 3\sqrt{2}, y = \pm \sqrt{2}$$