ALGEBRA (Q 2 & 3, PAPER 1)

1996

2 (a) Solve

$$2x - y = 7$$
$$x + 2y = 6.$$

(b) Write as a power of 2

(i) 16

(ii) $\sqrt{8}$.

Solve for x the equation

$$2^{2x-1} = \left(\frac{16}{\sqrt{8}}\right)^3.$$

(c) Solve

$$\frac{x-1}{x} - \frac{3x}{x-1} = 2,\ x \neq 0 \text{ and } x \neq 1.$$

3 (a) Express q in terms of p and t when

$$2(p - 3q) = t.$$

(b) Find the roots of the equation

$$2x^3 - 5x^2 + x + 2 = 0.$$

(c) Let $f(x) = (1-x)(2+x),\ x \in \mathbf{R}$.

Write down the solutions of $f(x) = 0$.

Find the range of values of x for which $f(x) > 0$.

Let $g(x) = f(x) - f(x+1)$.

Express $g(x)$ in the form $ax + b,\ a, b \in \mathbf{R}$.

Find the solution set of $g(x) < 0$.

ANSWERS

2 (a) $x = 4, y = 1$

(b) (i) 2^4 (ii) $2^{\frac{3}{2}}$; $x = \frac{17}{4} = 4 \cdot 25$

(c) $x = -\frac{1}{2}, \frac{1}{2}$

3 (a) $q = \dfrac{2p - t}{6}$

(b) $x = -\frac{1}{2}, 1, 2$

(c) $x = -2, 1;\ -2 < x < 1;\ g(x) = 2x + 2;\ x < -1$