

ALGEBRA (Q 2 & 3, PAPER 1)

1998

2 (a) Solve

$$5x - 2y = 13$$

$$3(x - 4) = 4y.$$

(b) Find the value of

$$\frac{a - b + 1}{a + b + 1}$$

when $a = \frac{1}{8}$ and $b = 2$.

(c) (i) Write $\sqrt{125}$ as a power of 5.

(ii) Solve for x the equation

$$\frac{5^{2x+1}}{\sqrt{5}} = \left(\frac{1}{\sqrt{125}}\right)^3.$$

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

$$q + \frac{p}{5t} = 3, t \neq 0.$$

(b) (i) If $(x - 2)$ is a factor of $3x^3 + x^2 + kx + 6$, find the value of k .

(ii) Write down an equation which has three roots of value $-3, 1$ and 5 .

(c) (i) Write $\frac{1}{x+1} + \frac{2}{x-3}$ as a single fraction where $x \neq -1$ and $x \neq 3$.

(ii) Hence, or otherwise, find, correct to one place of decimals, the two solutions of

$$\frac{1}{x+1} + \frac{2}{x-3} = 1, x \neq -1, x \neq 3.$$

ANSWERS

2 (a) $x = 2, y = -\frac{3}{2}$

(b) $-\frac{7}{25} = -0.28$

(c) (i) $5^{\frac{3}{2}}$ (ii) $-\frac{5}{2}$

3 (a) $p = 15t - 5tq$

(b) (i) -17 (ii) $x^3 - 3x^2 - 13x + 15 = 0$

(c) (i) $\frac{3x-1}{x^2-2x-3}$ (ii) $x = -0.4, 5.4$