

ALGEBRA (Q 2 & 3, PAPER 1)

2007

2 (a) Find the solution set of $4x - 15 < 1$, $x \in \mathbf{N}$.

(b) (i) Find the value of $\frac{x+3y+5}{2x+2y}$ when $x = \frac{5}{2}$ and $y = \frac{1}{3}$.

(ii) Find the value of x for which $2^{x+3} = 4^x$.

(c) (i) Solve the equation $x - \frac{1}{x} = 2$ and write your solutions in the form $a \pm \sqrt{b}$, where $a, b \in \mathbf{N}$.

(ii) Verify **one** of your solutions.

3 (a) Solve $2x = 3(5 - x)$.

(b) Solve the simultaneous equations

$$\frac{x}{4} - \frac{y}{3} = \frac{5}{6}$$

$$2x - 6 = 3y.$$

(c) Let $f(x) = 2x^3 + 11x^2 + 4x - 5$.

(i) Verify that $f(-1) = 0$.

(ii) Solve the equation

$$2x^3 + 11x^2 + 4x - 5 = 0.$$

ANSWERS

2 (a) $x < 4$

(b) (i) $\frac{3}{2}$ (ii) $x = 3$

(c) (i) $x = 1 \pm \sqrt{2}$

3 (a) $x = 3$

(b) (2, 2)

(c) (ii) $x = -5, -1, \frac{1}{2}$