ALGEBRA (Q 2 & 3, PAPER 1)

1997

2 (a) Solve for x

$$3(2x-1)=4x.$$

(b) Find the solution set E of $9-2x\geq 7,\ x\in\mathbf{N}$.

Find the solution set H of $\frac{1}{4}x-\frac{1}{3}\leq\frac{5}{12},\ x\in\mathbf{N}$.

Write down the elements of H\E.

(c) Simplify

$$\left(\sqrt{x}+\frac{3}{\sqrt{x}}\right)\left(\sqrt{x}-\frac{3}{\sqrt{x}}\right) \text{ where } x>0.$$

Hence solve for x

$$\left(\sqrt{x}+\frac{3}{\sqrt{x}}\right)\left(\sqrt{x}-\frac{3}{\sqrt{x}}\right)=8 \text{ where } x>0.$$

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

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

(b) Solve the equation

$$2x^3+3x^2-5x-6=0.$$

(c) Let $f(x)=(2+x)(3-x),\ x\in\mathbf{R}$.

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

Let $g(x)=3x-k$.

The equation $f(x)+g(x)=0$ has equal roots. Find the value of k.

ANSWERS

2 (a) $\frac{3}{2}$

(b) $\mathrm{E}=\{0, 1\}$, $\mathrm{H}=\{0, 1, 2, 3\}$, $\mathrm{H\backslash E}=\{2, 3\}$

(c) $x-\frac{9}{x}$; $x=-1, 9$

3 (a) $p=3t-q$

(b) $x=-2, -1, \frac{3}{2}$

(c) $x=-2, 3$; $k=10$