ALGEBRA (Q 2 & 3, PAPER 1)

2011

2. **(a)** Given that $3a(x+5)=114$, find the value of x when $a=4$.

(b) **(i)** Find A, the solution set of $3x-5<7,\ x\in\mathbb{Z}$.

(ii) Find B, the solution set of $\frac{-2-3x}{4}\le 1,\ x\in\mathbb{Z}$.

(iii) List the elements of $A\cap B$.

(c) Let $f(x)=x^3-2x^2+cx+d$.

(i) Given that $f(0)=6$, find the value of d.

(ii) Given that $f(3)=0$, find the value of c.

(iii) Hence, solve the equation $f(x)=0$.

3. **(a)** Multiply $(3x-1)(2x^2+5x-4)$ and simplify your answer.

(b) **(i)** Solve for x and y

$$2x=13+3y$$
$$\frac{x}{2}=\frac{2-y}{5}.$$

(ii) Hence, find the value of $4(x-y^2)$.

(c) **(i)** Solve for x

$$\frac{x-1}{x}+\frac{x}{x+1}=\frac{1}{2},\ x\neq 0,\ x\neq -1.$$

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

ANSWERS

2. (a) $x=4.5$
   (b) (i) $A=\{.....-2,-1,0,1,2,3\}$ (ii) $B=\{-2,-1,0,1,2,.....\}$
   (iii) $A\cap B=\{-2,-1,0,1,2,3\}$
   (c) (i) $d=6$ (ii) $c=-5$ (iii) $x=-2,1,3$

3. (a) $6x^3+13x^2-17x+4$
   (b) (i) $x=2, y=-3$ (ii) -28
   (c) (i) $x=-\frac{2}{3}, 1$