7	The points A , B and C have coordinates $(3,5)$, $(7,8)$ and $(6,1)$ respectively.	
	(a) Show, by calculation, that AB is perpendicular to AC .	(4)
	(b) Find an equation for AC in the form $ax + by + c = 0$, where a , b and c are integers whose values must be stated.	(2)
	The point D is on AC produced and $AC:CD=1:2$ (c) Find the coordinates of D .	(3)
	(d) Calculate the area of triangle <i>ABD</i> .	(2) (4)

Question 7 continued



Question 7 continued		

Question 7 continued		
(Ta.	tal for Question 7 is 13 marks)	
(10	tai ioi Yucstion / is is marks)	



8

$$\sin(A+B) = \sin A \cos B + \cos A \sin B$$
$$\cos(A+B) = \cos A \cos B - \sin A \sin B$$

$$\tan A = \frac{\sin A}{\cos A}$$

(a) Show that $\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$

(3)

(b) Hence write down an expression for $\tan 2\theta$ in terms of $\tan \theta$

(1)

(c) Show that $\tan 3\theta = \frac{3 \tan \theta - \tan^3 \theta}{1 - 3 \tan^2 \theta}$

(4)

Given that $\tan 3\theta = -1$ and $\tan \theta \neq \pm \frac{\sqrt{3}}{3}$

(d) without finding the value of θ , show that $\tan^3 \theta + 3 \tan^2 \theta - 3 \tan \theta - 1 = 0$

(1)

Given also that $\tan \theta \neq 1$

(e) find the exact values of $\tan \theta$, giving your answers in the form $a \pm \sqrt{b}$ where a and b are integers.

(4)

Question 8 continued



Question 8 continued

Question 8 continued		
(Total for Que	stion 8 is 13 marks)	

