

P425/1 S.6 PURE MATHEMATICS BELIEF TEST 2 TIME: 1 Hour		
1.	Solve the equation $\sqrt{(9-4x)} - \sqrt{(5-x)} = 2$	05 marks
2.	Find the derivatives of the following; a) $\frac{x^2 \sin \sqrt{x}}{\cot 3x}$ b) $\frac{e^{4x} \tan^{-1} 5x}{\sqrt{4x^2 + 3 \sin 7x}}$ c) $\log_3 \left(\frac{e^{8x} \cos 6x}{\tan^{-1} 3x} \right)$	12 marks
3.	R is a point which divides externally the line PQ with P(1, -2, 1) and Q(0, -1, 2) in the ratio 3 :2. Find the equation of the line through R and M(1, 0, 3).	05 marks
4.	Use Maclaurin's theorem to expand $e^{2x} \tan^{-1} x$ as far as the term in x^3	05 marks
5.	Obtain the equation of the locus of a point P which moves so that $\overline{PB} = 2\overline{PA}$, where A and B are the points (1,0) and (-1, 0) respectively.	05 marks
6.	a) Express $7\cos x + 24\sin x$ in the form $R\cos(x - \alpha)$ and hence solve $7\cos x + 24\sin x = 10$ for $-180^\circ \leq x \leq 180^\circ$. b) Prove that $\tan \theta + \cot \theta = 2\operatorname{cosec} 2\theta$. Hence solve the equation $\tan \theta + \cot \theta = 8\cos 2\theta$ for $0^\circ \leq x \leq 180^\circ$	12 marks
END.		

CHECK NOTE: As you attempt these questions, kindly identify the areas that are still challenging you.

Challenging area(s)	Strategy (Plan) to help you master them.