P425/2 S6 NUMERICAL METHODS								
				Time . I	nour			·
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1	Use trapezium rule with 5 strips to evaluate $\int_0^{\frac{n}{2}} \frac{1}{1+sinx} dx$, correct to four decimal places.							05 marks
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Z	(a) Use the trapezium rule with 6 ordinates to estimate the value $\int_{-\pi}^{\pi}$							
	of $\frac{\pi}{6}$, correct to 3 significant figures.							
	(b) (i)Calculate the percentage error in your estimation in (a) above							
	(i) suggest how the percentage error above may be reduced.							
3	The table below is an extract from the tables of $cosx^{\circ}$							
	$x = 80^{\circ}$	0'	10'	20'	30'	40′		
	cosx	0.1736	0.1708	0.1679	0.1650	0.1622		
	Use linear interpolation to estimate (b) $cos = 10.1695$							
	(a) $\cos 60^{-1} 0.1685$							
4	Show that the equation $lnx = 2 - x$ has a root between $x = 1$ and $x = 2$.							
	Hence use linear interpolation only once to find the root correct to 2 decimal places.							
	photo:							
5	A cylindrical pipe has a radius of 2.5cm measured to the nearest unit. If the							
	absolute relative error in calculating its volume is 0.125, find the absolute							
	relative error in measuring its height;							
6								
0	(a) Given that Δx and Δy are the errors made in approximating x and y to given numbers of decimal places respectively respectively. Show							
	that the maximum absolute error in $\frac{y}{x^2}$ is							
	$2 \left \frac{y \Delta x}{x} \right + \left \frac{\Delta y}{x} \right $							
	$\begin{bmatrix} -1 \\ x^3 \end{bmatrix} \begin{bmatrix} 1 \\ x^2 \end{bmatrix}$							
	$\begin{array}{c} (b) & \text{indice indication} \\ (b) & \text{limits within which the event value of } \\ \end{array}$							
	(1) limits within which the exact value of 2 1.6							
	(ii) percentage error made $\frac{0.74}{6^2}$ in . give your answers to 3sf							
	1.							

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