1	Either:	State or imply non-modular inequality $(x+3)^2 < (2x+1)^2$ or corresponding equation or pair of linear equations	B1	
		Attempt solution of 3-term quadratic or of 2 linear equations	M1	
		Obtain critical values $-\frac{4}{3}$ and 2	A1	
		State answer $x < -\frac{4}{3}$, $x > 2$	A1	
	Or:	Obtain critical value $x = 2$ from graphical method, inspection, equation	B1	
		Obtain critical value $x = -\frac{4}{3}$ similarly	B2	
		State answer $x < -\frac{4}{3}$, $x > 2$	B1	[4]
2	**(i)**	State or imply equation in the form $(5^x)^2 + 5^x - 12 = 0$	B1	
		Attempt solution of quadratic equation for 5^x	M1	
		Obtain $5^x = 3$ only	A1	[3]
	(ii)	Use logarithms to solve equation of the form $5^x = k$ where $k > 0$	M1	
		Obtain 0.683	A1	[2]
3	**(i)**	Attempt division, or equivalent, at least as far as quotient $2x + k$	M1	
		Obtain quotient $2x - 3$	A1	
		Complete process to confirm remainder is 4	A1	[3]
	(ii)	State or imply $(4x^2 + 4x - 3)$ is a factor	B1	
		Obtain $(2x-3)(2x-1)(2x+3)$	B1	[2]
4	**(i)**	State or imply $R = 15$	B1	
		Use appropriate formula to find α	M1	
		Obtain 53.13°	A1	[3]
	(ii)	Attempt to find at least one value of $\theta - \alpha$	M1	
		Obtain one correct value 68.6° of θ	A1	
		Carry out correct method to find second answer	M1	
		Obtain 217.7° and no others in range	A1	[4]
	(iii)	State 15, following their value of R from part **(i)**	B1√	[1]
5	**(i)**	State $\frac{dx}{dt} = \frac{1}{t+1}$	B1	
		State $\frac{dy}{dt} = 2e^{2t} + 2$	B1	
		Attempt expression for $\frac{dy}{dx}$	M1	
		Obtain $\frac{dy}{dx} = (2e^{2t} + 2)(t+1)$ or equivalent	A1	[4]
	(ii)	Substitute $t = 0$ and attempt gradient of normal	M1	
		Obtain $-\frac{1}{4}$ following their expression for $\frac{dy}{dx}$	A1√	
		Attempt to find equation of normal through point (0, 1)	M1	
		Obtain $x + 4y - 4 = 0$	A1	[4]

6	**(i)**	Attempt use of quotient rule or equivalent	M1	
		Obtain $\dfrac{2(x+2)\cos 2x - \sin 2x}{(x+2)^2}$ or equivalent	A1	
		Equate numerator to zero and attempt rearrangement	M1	
		Confirm given result $\tan 2x = 2x + 4$	A1	[4]
	(ii)	Consider sign of $\tan 2x - 2x - 4$ for 0.6 and 0.7 or equivalent	M1	
		Obtain –2.63 and 0.40 or equivalents and justify conclusion	A1	[2]
	(iii)	Use iteration process correctly at least once	M1	
		Obtain final answer 0.694	A1	
		Show sufficient iterations to 5 decimal places to justify answer or show a sign change in the interval (0.6935, 0.6945)	A1	[3]
		[0.6 $\rightarrow$ 0.69040 $\rightarrow$ 0.69352 $\rightarrow$ 0.69363 0.65 $\rightarrow$ 0.69215 $\rightarrow$ 0.69358 $\rightarrow$ 0.69363 0.7 $\rightarrow$ 0.69384 $\rightarrow$ 0.69364 $\rightarrow$ 0.69363]		
7	**(i)**	Replace $\tan^2 x$ by $\sec^2 x - 1$	B1	
		Express $\cos^2 x$ in the form $\pm\frac{1}{2}\pm\frac{1}{2}\cos 2x$	M1	
		Obtain given answer $\sec^2 x + \frac{1}{2}\cos 2x - \frac{1}{2}$ correctly	A1	
		Attempt integration of expression	M1	
		Obtain $\tan x + \frac{1}{4}\sin 2x - \frac{1}{2}x$	A1	
		Use limits correctly for integral involving at least $\tan x$ and $\sin 2x$	M1	
		Obtain $\frac{5}{4} - \frac{1}{8}\pi$ or exact equivalent	A1	[7]
	(ii)	State or imply volume is $\int \pi(\tan x + \cos x)^2\, dx$	B1	
		Attempt expansion and simplification	M1	
		Integrate to obtain one term of form $k\cos x$	M1	
		Obtain $\pi(\frac{5}{4} - \frac{1}{8}\pi) + \pi(2 - \sqrt{2})$ or equivalent	A1	[4]