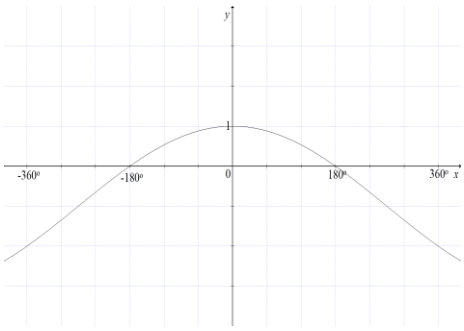
Question	Answer	Marks	Partial Marks
1(a)	$y=-\frac{1}{2}(x+2)(x+1)(x-5)$	**B1**	For $-\frac{1}{2}$
		B1	For $(x+2)(x+1)(x-5)$
1(b)	$-2 \leqslant x \leqslant -1$	**B1**	
	$x \geqslant 5$	**B1**	
2(a)	1080°	**B1**	
2(b)		**B1**	For correct shape and symmetry about the *y*-axis
		B1	For correct *x*-intercepts
		B1	For correct *y*-intercept
3	$\frac{dr}{dt}=5$	**B1**	
	$\frac{dA}{dr}=2\pi r$	**B1**	
	$\frac{dA}{dt}=\frac{dA}{dr}\times\frac{dr}{dt}$ leading to $\frac{dA}{dt}=10\pi r$	**M1**	Use of the chain rule, may be implied by $5\times 6\pi$
	$\frac{dA}{dt}=30\pi$	**A1**	

Question	Answer	Marks	Partial Marks
4	$x=\dfrac{-\left(4-2\sqrt{7}\right)+\sqrt{\left(4-2\sqrt{7}\right)^2-4\left(5+4\sqrt{7}\right)(-1)}}{2\left(5+4\sqrt{7}\right)}$	**M1**	For correct use of quadratic formula, allow inclusion of ± until final answer
	$x=\dfrac{-\left(4-2\sqrt{7}\right)+\sqrt{16+28-16\sqrt{7}+20+16\sqrt{7}}}{2\left(5+4\sqrt{7}\right)}$ $x=\dfrac{-\left(4-2\sqrt{7}\right)+8}{2\left(5+4\sqrt{7}\right)}$	**M1**	For attempt to simplify discriminant, must see attempt at expansion and subsequent simplification
	$x=\dfrac{4+2\sqrt{7}}{2\left(5+4\sqrt{7}\right)}$ or $x=\dfrac{2+\sqrt{7}}{\left(5+4\sqrt{7}\right)}$	**A1**	For either
	$x=\dfrac{2+\sqrt{7}}{\left(5+4\sqrt{7}\right)}\times\dfrac{5-4\sqrt{7}}{5-4\sqrt{7}}$ $x=\dfrac{10+5\sqrt{7}-8\sqrt{7}-28}{25-112}$	**M1**	For attempt to rationalise, must see attempt at expansion and subsequent simplification
	$x=\dfrac{6}{29}+\dfrac{\sqrt{7}}{29}$	**A1**	
5	$\dfrac{\mathrm{d}y}{\mathrm{d}x}=\dfrac{(x+2)\dfrac{6x}{3x^2-1}-\ln\left(3x^2-1\right)}{(x+2)^2}$	**B1**	B1 for $\dfrac{6x}{3x^2-1}$
		M1	For attempt to differentiate a quotient or an equivalent product, must have correct order of terms and correct sign
		A1	
	When $x=1$, $y=\dfrac{\ln 2}{3}$ or $0.231(0)$	**B1**	
	When $x=1$, $\dfrac{\mathrm{d}y}{\mathrm{d}x}=0.92298$, allow 0.923	**B1**	
	$y=0.923x-0.692$	**B1**	
6(a)	$x(5x+6)=8$ $5x^2+6x-8=0$	**M1**	For attempt to equate and obtain a 3-term quadratic in either x or y
	$\left(\dfrac{4}{5},\ 10\right)$	**A1**	Allow A1 if only x-coordinates or only y-coordinates are given
	(–2, –4)	**A1**	