Question	Answer	Marks	Guidance
8(a)(i)	$\sin x \dfrac{\sin x}{\cos x} + \cos x$	**B1**	
	$\dfrac{\sin^2 x + \cos^2 x}{\cos x}$ oe	**B1**	
	$\dfrac{1}{\cos x} = \sec x$	**B1**	Poor notation is B0
8(a)(ii)	$\sec\dfrac{\theta}{2} = 4$ $\cos\dfrac{\theta}{2} = \dfrac{1}{4}$	**M1**	For use of (i) and dealing with sec to obtain $\cos\dfrac{\theta}{2} = \dfrac{1}{4}$
	$\dfrac{\theta}{2} = 1.3181,\ 4.9651$ $\theta = 2.64$ or 0.839π $\theta = 9.93$ or 3.16π	**3**	**Dep M1** for a correct attempt to solve to obtain at least one solution for θ **A1** for one correct solution **A1** for a second correct solution and no extra solutions
8(b)	$\tan\left(y + 38^\circ\right) = \dfrac{1}{\sqrt{3}}$ $y = 172^\circ$ $y = 352^\circ$	**3**	**M1** for dealing with cot and a correct attempt to obtain at least one correct solution, allow for -8° **A1** for one correct solution **A1** for a second correct solution and no extra solutions
9(a)	$(2x-1)\left(x^2 - x - 1\right)$	**M1**	For attempt at factorisation by observation or by algebraic long division
	$(2x-1)\left(x^2 - x - 1\right)$	**A1**	cao
9(b)	At A $x = \dfrac{1}{2}$	**B1**	
	$x^2 - x - 1 = 0$	**M1**	For a valid attempt to solve *their* quadratic equation, allow for decimal solutions
	$x = \dfrac{1 \pm \sqrt{5}}{2}$ soi	**A1**	
	At B $x = \dfrac{1 + \sqrt{5}}{2}$	**A1**	

Question	Answer	Marks	Guidance
9(c)	$\int \frac{1}{x}\,\mathrm{d}x = \ln x$	**B1**	
	$\left[\ln x\right]_{\frac{1}{2}}^{\frac{1+\sqrt{5}}{2}} = \ln\left(1+\sqrt{5}\right)$	**B1**	Allow $\ln\left(\frac{1+\sqrt{5}}{2}\right) - \ln\frac{1}{2}$
	$\left(\int -2x^2+3x+1\right)\mathrm{d}x = -\frac{2}{3}x^3+\frac{3x^2}{2}+x$	**M1**	**M1** for attempt at $-\frac{2}{3}x^3+\frac{3x^2}{2}+x$, must have 2 correct terms.
	$\left[-\frac{2}{3}x^3+\frac{3x^2}{2}+x\right]_0^{\frac{1}{2}}$ $=\left(-\frac{2}{3}\times\frac{1}{8}\right)+\left(\frac{3}{2}\times\frac{1}{4}\right)+\frac{1}{2}$ oe	**M1**	**Dep** for correct application of the limits 0 and $\frac{1}{2}$ and attempt to evaluate – may be implied by 0.792 or $\frac{19}{24}$.
	$\frac{19}{24}$	**A1**	
	$\ln\left(1+\sqrt{5}\right)+\frac{19}{24}$	**A1**	isw
10(a)	$\frac{(x-1)(6x)\left(2x^2+10\right)^{\frac{1}{2}}-\left(2x^2+10\right)^{\frac{3}{2}}}{(x-1)^2}$	**3**	**B1** for $\frac{3}{2}\times 4x\times\left(2x^2+10\right)^{\frac{1}{2}}$ oe **M1** for correct attempt at differentiation of a quotient **A1** for all the other terms correct
	$\left(\frac{\left(2x^2+10\right)^{\frac{1}{2}}}{(x-1)^2}\right)\quad\left(4x^2-6x-10\right)$	**2**	**A2** for all 3 terms correct in the quadratic **A1** for 2 terms correct and 1 incorrect term in the quadratic **A0** for 1 term correct or no terms correct in the quadratic