Question	Answer	Marks	Guidance
8(a)	Use $\tan^2\beta = \dfrac{\sin^2\beta}{\cos^2\beta}$	B1	E.g. $\tan^2\beta = \dfrac{\sin^2\beta}{\cos^2\beta}$ and then replaces $\sin^2\beta$ with a^2 or $\cos^2\beta$ with $1-a^2$.
	$\cos\beta = -\sqrt{1-a^2}$	B1	
	Obtain $\dfrac{a^2}{1-a^2} + 3a\sqrt{1-a^2}$	B1	
		3	

Question	Answer	Marks	Guidance
8(b)	Use correct identity to obtain 3-term quadratic equation in $\sin\theta$	*M1	
	Obtain $\sin^2\theta+4\sin\theta+1[=0]$	A1	
	Attempt to solve quadratic	DM1	At least as far as $\frac{-4\pm\sqrt{12}}{2}$. -15.5° implies attempt at solving quadratic.
	Obtain 195.5	A1	
	Obtain 344.5	A1FT	Following first answer; and no others for $0^\circ<\theta<360^\circ$ but must be in 4th quadrant. **SC B1** for 3.41^c and 6.01^c.
		5	

Question	Answer	Marks	Guidance
1(a)	$a=4$	**B1**	Allow $4\sin(2x)+3$ if values of a, b and c are not stated.
	$b=2$	**B1**	
	$c=3$	**B1**	
		3	
1(b)(i)	5	**B1**	Ignore attempts at finding solutions.
		1	
1(b)(ii)	1	**B1**	Ignore attempts at finding solutions.
		1	

Question	Answer	Marks	Guidance
2	$\cos\left(\frac{\pi}{6}\right)+\tan 2x+\frac{\sqrt{3}}{2}=0 \Rightarrow \tan 2x=-\sqrt{3}$	**M1**	Making $\tan 2x$ the subject. $\tan 2x=0$ is M0. Accept decimals and one sign error.
	$\Rightarrow 2x=-\frac{\pi}{3} \Rightarrow x=-\frac{\pi}{6}$	**A1**	May come from non-exact working. Ignore answers outside the given range.
		2	

Question	Answer	Marks	Guidance
4	Let $x = \sin^2\theta$ $(2x+7)(2x-1) = 0$ or $\left(2\sin^2\theta+7\right)\left(2\sin^2\theta-1\right)$	**M1**	Or equivalent method.
	$\Rightarrow \sin^2\theta = \frac{1}{2} \Rightarrow \sin\theta = [\pm]\frac{1}{\sqrt{2}}$	**M1**	Finding $\sin^2\theta$ and then $\sin\theta$ (may be implied).
	$\theta = 45°,\ 135°,\ 225°,\ 315°$	**A1 A1**	A1 for any two correct values. A1 for all correct and no others within the range. For answers in radians, A1 only for all 4 angles. If no (correct) working, then **SC B1** for all 4 solutions.
		4	