Question	Answer	Marks	Guidance
(a)	Use at least two of $\sin 2\theta = 2\sin\theta\cos\theta$, $\cos 2\theta = \cos^2\theta - \sin^2\theta$, $\cot\theta = \dfrac{\cos\theta}{\sin\theta}$	**B1**	OE
	Express LHS in terms of $\sin\theta$ and $\cos\theta$ only and attempt valid simplification	**M1**	
	Obtain $\cos^2\theta + \sin^2\theta$ or equivalent and hence 1	**A1**	AG – necessary detail needed
		3	
(b)	Substitute $\theta = \frac{1}{12}\pi$ and show or imply $\sin\frac{1}{6}\pi\cot\frac{1}{12}\pi = 1 + \cos\frac{1}{6}\pi$	**M1**	
	Obtain $1 + \frac{1}{2}\sqrt{3}$ or exact equivalent	**A1**	
		2	

Question	Answer	Marks	Guidance
(c)	Use the identity from part **(a)** to obtain $-2\cos 2\theta = 0$ or equivalent	**M1**	Or alternative starting again, using valid simplification and reaching single trigonometric function.
	Obtain $\theta = \frac{1}{4}\pi$	**A1**	
		2	