Q	Marking instructions	AO	Marks	Typical solution
4(a)(i)	Completes reasoned argument to obtain $\tan^2\theta = 4$ using $\tan\theta = \frac{\sin\theta}{\cos\theta}$	2.1	R1	$\frac{\sin\theta}{\cos\theta}\tan\theta = 4$ $\tan\theta \times \tan\theta = 4$ $\tan^2\theta = 4$
	Subtotal		**1**	

Q	Marking instructions	AO	Marks	Typical solution
4(a)(ii)	Obtains $\tan\theta = 2$ or $\tan\theta = -2$ PI by one correct value for θ	1.1a	M1	$\tan\theta = \pm 2$ $\theta = 63°, 117°, 243°, 297°$
	Obtains **any** two solutions for θ AWRT 63°, 117°, 243°, 297°	1.1b	A1	
	Obtains **all** four solutions for θ and no extras within $0° < \theta < 360°$ AWRT 63°, 117°, 243°, 297°	1.1b	A1	
	Subtotal		**3**	

Q	Marking instructions	AO	Marks	Typical solution
4(b)	Deduces that it is necessary to divide solutions from **(a)** by 3 PI by one correct value for α	2.2a	M1	$\alpha = 21°, 39°, 81°, 99°, 141°, 159°$
	Obtains at least three correct values for α	1.1b	A1	
	Obtains all six solutions for α and no extras within $0° < \theta < 180°$ AWRT 21°, 39°, 81°, 99°, 141°, 159°	1.1b	A1	
	Subtotal		**3**	

	Question 4 Total		**7**	