

Question	Scheme	Marks	AOs
11(i)	$(2\theta + 10^\circ) = \arcsin(-0.6)$	M1	1.1b
	$(2\theta + 10^\circ) = -143.13^\circ, -36.87^\circ, 216.87^\circ, 323.13^\circ$ (Any two)	A1	1.1b
	Correct order to find $\theta = \dots$	dM1	1.1b
	Two of $\theta = -76.6^\circ, -23.4^\circ, 103.4^\circ, 156.6^\circ$.	A1	1.1b
	$\theta = -76.6^\circ, -23.4^\circ, 103.4^\circ, 156.6^\circ$, only	A1	2.1
		(5)	
(ii)	(a) Explains that the student has not considered the negative value of $x (= -29.0^\circ)$ when solving $\cos x = \frac{7}{8}$	B1	2.3
	Explains that the student should check if any solutions of $\sin x = 0$ (the cancelled term) are solutions of the given equation. $x = 0^\circ$ should have been included as a solution	B1	2.3
	(b) Attempts to solve $4\alpha + 199^\circ = (360 - 29.0)^\circ$	M1	2.2a
	$\alpha = 33.0^\circ$	A1	1.1b
		(4)	

(9 marks)

Notes:

(i)

M1: Attempts $\arcsin(-0.6)$ implied by any correct answer

A1: Any two of $-143.13^\circ, -36.87^\circ, 216.87^\circ, 323.13^\circ$

dM1: Correct method to find any value of θ

A1: Any two of $\theta = -76.6^\circ, -23.4^\circ, 103.4^\circ, 156.6^\circ$.

A1: A full solution leading to all four answers and no extras

$\theta = -76.6^\circ, -23.4^\circ, 103.4^\circ, 156.6^\circ$, only

(ii)(a)

B1: See scheme

B1: See scheme

(ii)(b)

M1: For deducing the smallest positive solution occurs when $4\alpha + 199^\circ = (360 - 29.0)^\circ$

A1: $\alpha = 33^\circ$