

Question	Scheme	Marks	AOs
1 (i)	Uses $\cos^2 \theta = 1 - \sin^2 \theta$ $5 \cos^2 \theta = 6 \sin \theta \Rightarrow 5 \sin^2 \theta + 6 \sin \theta - 5 = 0$	M1 A1	1.2 1.1b
	$\Rightarrow \sin \theta = \frac{-3 + \sqrt{34}}{5} \Rightarrow \theta = \dots$	dM1	3.1a
	$\Rightarrow \theta = 34.5^\circ, 145.5^\circ, 394.5^\circ$	A1 A1	1.1b 1.1b
		(5)	
(ii) (a)	One of - They cancel by $\sin x$ (and hence they miss the solution $\sin x = 0 \Rightarrow x = 0$) - They do not find all the solutions of $\cos x = \frac{3}{5}$ (in the given range) or they missed the solution $x = -53.1^\circ$	B1	2.3
	Both of the above	B1	2.3
		(2)	
(ii) (b)	Sets $5\alpha + 40^\circ = 720^\circ - 53.1^\circ$	M1	3.1a
	$\alpha = 125^\circ$	A1	1.1b
		(2)	
(9 marks)			
Notes			
(i)			
M1: Uses $\cos^2 \theta = 1 - \sin^2 \theta$ to form a 3TQ in $\sin \theta$			
A1: Correct 3TQ=0 $5 \sin^2 \theta + 6 \sin \theta - 5 = 0$			
dM1: Solves their 3TQ in $\sin \theta$ to produce one value for θ . It is dependent upon having used $\cos^2 \theta = \pm 1 \pm \sin^2 \theta$			
A1: Two of awrt $\theta = 34.5^\circ, 145.5^\circ, 394.5^\circ$ (or if in radians two of awrt 0.60, 2.54, 6.89)			
A1: All three of awrt $\theta = 34.5^\circ, 145.5^\circ, 394.5^\circ$ and no other values			
(i) (a)			
See scheme			
(ii)(b)			
M1: Sets $5\alpha + 40^\circ = 666.9^\circ$ o.e.			
A1: awrt $\alpha = 125^\circ$			