

Question number	Scheme	Marks
7 (a)	$(3x - 15 =) 30 \text{ or } 330 \text{ or } 390$ $x = 15 \quad x = 115 \quad x = 135$	M1 M1 A1 A1 [4]
(b)	$3 \frac{\sin y}{\cos y} + 4 \sin y = 0 \rightarrow \sin y \left(\frac{3}{\cos y} + 4 \right) = 0$ $\sin y = 0 \quad \text{and} \quad \cos y = -\frac{3}{4} \quad \rightarrow y =$ $y = -180, 0$ $y = 138.6, -138.6$	M1 A1ft A1 A1
	ALT $3 \tan y + 4 \tan y \cos y = 0 \rightarrow \tan y (3 + 4 \cos y) = 0$ $\tan y = 0 \quad \text{and} \quad \cos y = -\frac{3}{4} \quad \rightarrow y =$ $y = -180, 0$ $y = 138.6, -138.6$	M1 A1ft A1 A1 [4]
(c)	$\cos \theta = 3(1 - \cos^2 \theta) - 1 \rightarrow 3\cos^2 \theta + \cos \theta - 2 = 0$ $(3\cos \theta - 2)(\cos \theta + 1)$ $\theta = -180$ $\theta = 48.2, -48.2$	M1 M1 A1 A1 [4]
Total 12 marks		

Part	Mark	Additional Guidance
(a)	M1	For any of 30 or 330 or 390 May be implied by correct answers.
	M1	Solves a linear equation coming from attempt at use of inverse trigonometric function to obtain one value. e.g. solves $3x - 15 = "30"$
	A1 A1	First A1 for any correct value, second A1 for all 3 correct values and no others in the range. Ignore values outside the range.
(b)	M1	Correctly replaces the identity for $\tan y$ and attempts to deal with $\sin y$. Allow for factorising. Condone dividing through by $\sin y$. Minimally acceptable attempt for factorisation is $A \sin y \left(\frac{B}{\cos y} + C \right)$
	A1ft	$\sin y = 0$ and $\cos y = -\frac{B}{C}$, follow through their B and C only .
	A1	From sine: Both values, ignore extra values out of range, A0 for extra values in range.
	A1	From cosine: Both values, ignore extra values out of range, A0 for extra values in range. $y = \text{awrt } 138.6, \text{ awrt } -138.6$
	ALT	
	M1	Correctly replaces the identity for $\tan y$ and attempts to deal with $\tan y$. Allow for factorising. Condone dividing through by $\tan y$. Minimally acceptable attempt for factorisation is $A \tan y (B + C \cos y)$
	A1ft	$\tan y = 0$ and $\cos y = -\frac{B}{C}$, follow through their B and C only .
	A1	From tangent: Both values, ignore extra values out of range, A0 for extra values in range.
	A1	From cosine: Both values, ignore extra values out of range, A0 for extra values in range. $y = \text{awrt } 138.6, \text{ awrt } -138.6$
(c)	M1	Correctly uses the identity for $\cos^2 \theta$ and rearranges to get a 3TQ Minimally acceptable attempt is $\pm 3\cos^2 \theta \pm \cos \theta \pm 2 = 0$
	M1	Solves a 3TQ to arrive at 2 distinct values for $\cos \theta$. See general guidance.
	A1	For -180 , ignore extra values out of range, A0 for extra values in range.
	A1	Both values, ignore extra values out of range, A0 for extra values in range. $\theta = \text{awrt } 48.2, \text{ awrt } -48.2$