

Question		Answer	Marks	AO	Guidance	
5	(a)	$2 \cos x \tan^2 x = 3(1 + \cos x)$ $2 \cos x \frac{\sin^2 x}{\cos^2 x} = 3(1 + \cos x)$ $2 \cos x \left(\frac{1 - \cos^2 x}{\cos^2 x} \right) = 3(1 + \cos x)$ $2(1 - \cos^2 x) = 3 \cos x(1 + \cos x)$ $2 - 2 \cos^2 x = 3 \cos x + 3 \cos^2 x$ $5 \cos^2 x + 3 \cos x - 2 = 0$	<p>M1</p> <p>M1</p> <p>A1</p> <p>[3]</p>	<p>3.1a</p> <p>3.1a</p> <p>2.1</p>	<p>Replaces $\tan^2 x$ with $\frac{\sin^2 x}{\cos^2 x}$</p> <p>Replaces $\sin^2 x$ with $1 - \cos^2 x$</p> <p>AG – correct working throughout</p>	<p>Must show enough working to justify the given answer</p>
5	(b)	<p>DR</p> $(5 \cos 3\theta - 2)(\cos 3\theta + 1) = 0$ $\cos 3\theta = -1 \text{ and } \cos 3\theta = \frac{2}{5}$ $\theta = \frac{1}{3} \arccos(-1), \theta = \frac{1}{3} \arccos\left(\frac{2}{5}\right),$ <p>60</p> <p>22.1</p> <p>97.9</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>A1</p> <p>[6]</p>	<p>1.1a</p> <p>2.1</p> <p>1.1</p> <p>1.1</p> <p>1.1</p> <p>1.1</p>	<p>Attempt to solve 3-term quadratic</p> <p>May be implied</p> <p>Correct order of operation to find one value of θ (or all values of 3θ correct)</p> <p>Correct value (to at least 1 dp)</p> <p>Correct value (to at least 1 dp)</p>	<p>$(3\theta =) 66.42\dots,$ 180, 293.57...</p> <p>Any additional values in the range loses final A mark if earned</p>