Question			Answer	Mark	AO	Guidance
5	(a)		$\sec 2\theta = 2$	M1	3.1a	May be implied by $\cos 2\theta = \frac{1}{2}$
			$\cos 2\theta = \frac{1}{2}$	M1	1.1	May see $\frac{1}{\cos 2\theta} = 2 \Rightarrow \frac{1}{2\cos^2\theta - 1} = 2 \Rightarrow 4\cos^2\theta - 2 = 1$ and $\cos^2\theta = \frac{3}{4} \Rightarrow \cos\theta = \frac{\sqrt{3}}{2}$).
			$2\theta = 60°$ or $300°$	A1	2.1	A1 for at least one correct value seen, ignore extras. This mark may be implied by at least one correct solution for θ i.e. 30° or 150° Allow **A1A0** for one or more correct solutions in radians $\frac{\pi}{6}, \frac{5\pi}{6}$
			$\theta = 30°$ or $150°$	A1 [4]	1.1	Both values must be seen in °. **A0** for others in the range $[0, 180°]$. **SCB2** (max. 2 / 4) for correct answers without working.
5	(b)	(i)	$\left[\frac{1}{\cos 2\theta} =\right] \frac{1}{2\cos^2\theta - 1}$	M1	2.1	Correct use of a double angle formula. May see $\frac{1}{\cos^2\theta - \sin^2\theta}$ (NB candidates may work on both sides in parallel).
			$= \frac{1}{\frac{2}{\sec^2\theta} - 1} = \frac{\sec^2\theta}{2 - \sec^2\theta}$ **AG**	A1	1.1	**AG** Must see intermediate step or equivalent working e.g. $\div \frac{\cos^2\theta}{\cos^2\theta}$
			Alternative method starting from RHS: $\frac{\sec^2\theta}{2-\sec^2\theta} = \left[\frac{1}{\cos^2\theta} \times \frac{1}{2-\sec^2\theta}\right]$ $= \frac{1}{2\cos^2\theta - 1}$	M1		Correct use of $\sec\theta = \frac{1}{\cos\theta}$ to obtain a correct expression in $\cos\theta$ only or $\sec^2\theta = 1 + \tan^2\theta$ to obtain a correct expression in $\tan\theta$ only (and then $\tan\theta = \sin\theta / \cos\theta$ etc.) oe. May see $\frac{\frac{1}{\cos^2\theta}}{2 - \frac{1}{\cos^2\theta}}$
			$\frac{1}{2\cos^2\theta - 1}\left[= \frac{1}{\cos 2\theta}\right]$ $= \sec 2\theta$ **AG**	A1		**AG** Must see intermediate step i.e. use of double angle formula.
				[2]		
5	(b)	(ii)	$\frac{\sec^2\theta}{2-\sec^2\theta} = \frac{1+\tan^2\theta}{2-(1+\tan^2\theta)}$ $\left[= \frac{1+\tan^2\theta}{1-\tan^2\theta}\right]$	M1	3.1a	Use of $\sec^2\theta = 1 + \tan^2\theta$ oe to reach a form to substitute in $x = \tan\theta$ oe (i.e. y in terms of $\tan\theta$). May be implied by A1.
			$y = \frac{1+x^2}{1-x^2}$	A1 [2]	2.2a	oe (allow unsimplified) but must be in terms of y and x only Condone e.g. $y = \frac{\frac{1}{x^2}+1}{\frac{1}{x^2}-1}$.