

Question			Answer	Mark	AO	Guidance
4	(a)		LHS $\equiv \cos^2 \theta + \sin^2 \theta + 2 \cos \theta \sin \theta$ [$\cos^2 \theta + \sin^2 \theta \equiv 1$ hence] ($\cos \theta + \sin \theta$) ² $\equiv 1 + \sin 2\theta$ AG	M1	2.1	Allow “=” throughout Q4 M1 for expanding correctly
			A1	2.4	Must see final statement www	
		Alternative method 1 + sin 2θ $\equiv \cos^2 \theta + \sin^2 \theta + 2 \cos \theta \sin \theta$ 1 + sin 2θ $\equiv (\cos \theta + \sin \theta)^2$ AG	M1 A1		Must see final statement www	
			[2]			
4	(b)		LHS $\equiv \left[\frac{1}{\cos 2\theta} + \right] \frac{\sin 2\theta}{\cos 2\theta}$ $\equiv \frac{1+\sin 2\theta}{\cos 2\theta}$ or $\frac{1+\sin 2\theta}{\cos^2 \theta - \sin^2 \theta}$ $\equiv \frac{(\cos \theta + \sin \theta)^2}{\cos^2 \theta - \sin^2 \theta}$ $\equiv \frac{(\cos \theta + \sin \theta)^2}{(\cos \theta - \sin \theta)(\cos \theta + \sin \theta)}$ $\equiv \frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta}$ AG	M1 A1 A1 A1	3.1a 1.1 2.1 2.2a	For writing tan 2θ as $\frac{\sin 2\theta}{\cos 2\theta}$ or $\frac{2 \tan \theta}{1 - \tan^2 \theta}$. May be seen embedded or implied by next A1 (Allow this mark if sec 2θ still used) May see 1 + 2 cos θ sin θ for the numerator here Allow A1 for correct numerator or correct denominator seen in terms of θ, not 2θ. Allow this mark even if subsequently √ incorrectly. correctly obtained www, ie must see previous line
		Alternative method RHS $\equiv \frac{(\cos \theta + \sin \theta)^2}{(\cos \theta - \sin \theta)(\cos \theta + \sin \theta)}$ $\equiv \frac{1 + \sin 2\theta}{\cos^2 \theta - \sin^2 \theta}$ $\equiv \frac{1 + \sin 2\theta}{\cos 2\theta}$ $\equiv \sec 2\theta + \tan 2\theta$ AG	M1 A1 A1 A1		or $\frac{(\cos \theta + \sin \theta)^2}{\cos^2 \theta - \sin^2 \theta}$ seen correct numerator seen correct denominator seen in terms of 2θ, not θ correctly obtained www, ie must see previous line	
		Alternative method using t-formulae LHS $\equiv \frac{1+t^2}{1-t^2} + \frac{2t}{1-t^2}$ (t = tan θ) $\equiv \left[\frac{(1+t)^2}{1-t^2} \right] \equiv \frac{(1+t)^2}{(1-t)(1+t)}$ $\equiv \frac{1+t}{1-t}$ $\equiv \frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta}$ AG	M1 A1 A1 A1		www	
			[4]			