	Completes reasoned argument by using $n\log_3 3$ and $(2n-5)\log_3 2$ to show required result **AG** Do not allow recovery of omitted brackets	2.1	R1	$\log_3 u_n = \log_3 \frac{3^n}{2^{2n-5}}$ $= \log_3 3^n - \log_3 2^{2n-5}$ $= n-(2n-5)\log_3 2$ $= n+(5-2n)\log_3 2$ $= n-2n\log_3 2+5\log_3 2$ $= n(1-2\log_3 2)+5\log_3 2$
	Total		**12**	

Q	Marking Instructions	AO	Marks	Typical Solution
9(a)	Uses cosec$2\theta = \frac{1}{\sin 2\theta}$ and cot$2\theta = \frac{\cos 2\theta}{\sin 2\theta}$	1.2	B1	$\frac{1}{\sin 2\theta} + \frac{\cos 2\theta}{\sin 2\theta}$ $= \frac{1+\cos 2\theta}{\sin 2\theta}$ $= \frac{1+\cos^2\theta - \sin^2\theta}{2\sin\theta\cos\theta}$ $= \frac{2\cos^2\theta}{2\sin\theta\cos\theta}$ $= \frac{\cos\theta}{\sin\theta} = \cot\theta$
	Uses the identity for $\sin 2\theta = 2\sin\theta\cos\theta$ or an identity for $\cos 2\theta = \cos^2\theta - \sin^2\theta$ *or* $2\cos^2\theta - 1$ or $1 - 2\sin^2\theta$ to commence proof	2.1	M1	
	Uses the identities for sin2θ and cos2θ in correct proof	1.1b	A1	
	Completes a reasoned argument leading to a single trigonometric fraction to prove given identity **AG**	2.1	R1	
9(b)	Deduces that when $\cos\theta = 0$ then $\cot\theta$ is defined/zero/exists on LHS but cosec2θ or cot2θ or $\frac{1}{2\sin\theta\cos\theta}$ *or* $\frac{1}{\sin 2\theta}$ is undefined on RHS or deduces that LHS is defined but RHS is undefined Must compare both LHS and RHS	2.2a	E1	When $\cos\theta = 0$ the value of $\cot\theta = 0$ on LHS but because the value of sin2θ =0, cosec2θ and cot2θ are undefined on RHS.
	Total		**5**	