Question	Answer	Marks	Guidance
9(c)	$\frac{\textit{their } x}{\textit{their}\sin A} = \frac{\sqrt{5}+1}{\sin B}$ oe, soi or $\frac{1}{2}\times(\sqrt{5}-1)\times \textit{their } x\times\sin B = \frac{2\sqrt{5}}{3}$ oe, soi	**M1**	**FT** *their x* and *their* sin*A*
	Correct expression $\frac{\sqrt{\frac{20}{3}}}{\frac{\sqrt{5}}{3}} = \frac{\sqrt{5}+1}{\sin B}$ oe or $\frac{1}{2}\times(\sqrt{5}-1)\times\sqrt{\frac{20}{3}}\times\sin B = \frac{2\sqrt{5}}{3}$ oe	**A1**	
	$\frac{\sqrt{15}+\sqrt{3}}{6}$ or $\frac{\sqrt{3}}{6}(\sqrt{5}+1)$ or $\frac{\sqrt{5}+1}{2\sqrt{3}}$ oe, isw	**A1**	
10(a)	$ar^2 = 4.5$ and $ar^5 = 15.1875$ soi	**B1**	
	Correctly eliminates one unknown using correct equations e.g $\left(\frac{4.5}{r^2}\right)r^5 = 15.1875$ or $\sqrt{\frac{4.5}{a}} = \sqrt[5]{\frac{15.1875}{a}}$ oe, soi	**M1**	
	$r = 1.5$, $a = 2$	**A2**	**A1** for either
10(b)	$S_{15} = \frac{2(1-1.5^{15})}{1-1.5}$ and $S_{25} = \frac{2(1-1.5^{25})}{1-1.5}$ oe	**B2**	**M1 FT** *their a* and *r* for $S_{15} = \frac{2(1-1.5^{15})}{1-1.5}$ or $S_{25} = \frac{2(1-1.5^{25})}{1-1.5}$ oe
	Correct plan: $S_{25} - S_{15}$ oe attempted	**M1**	**FT** *their a* and *r*
	99 253	**A1**	

Question	Answer	Marks	Guidance
10(b)	**Alternative 1**		
	first term = (*their*2)(*their*1.5)^{15} and an attempt at S_{10}	**(M1)**	**FT** *their a* and *r*
	Correct sum $S_{10} = \frac{875.7...(1-1.5^{10})}{1-1.5}$ oe	**(B2)**	**M1 FT** *their* first term and *r* for $S_{10} = \frac{\textit{their}875.7...(1-\textit{their}1.5^{10})}{1-\textit{their}1.5}$
	99 253	**(A1)**	
	Alternative 2		
	Correct sum: $2(1.5)^{15} + 2(1.5)^{16} + 2(1.5)^{17} + 2(1.5)^{18} + 2(1.5)^{19} + 2(1.5)^{20} + 2(1.5)^{21} + 2(1.5)^{22} + 2(1.5)^{23} + 2(1.5)^{24}$ oe or $2(1.5)^{15}\{1 + 1.5 + (1.5)^2 + (1.5)^3 + (1.5)^4 + (1.5)^5 + (1.5)^6 + (1.5)^7 + (1.5)^8 + (1.5)^9\}$	**(M3)**	**M2 FT** *their a* and *r* for sum starting with $2(1.5)^{15}$ **and** ending with $2(1.5)^{24}$ with at most one omission or error or **M1 FT** *their a* and *r* for sum starting with $2(1.5)^{15}$ **or** ending with $2(1.5)^{24}$ with at most two omissions or errors
	99 253	**(A1)**	
11(a)	(–2, 2)	**B2**	**B1** for one correct coordinate nfww **M1** for $\overrightarrow{AC} = \frac{1}{3}\begin{pmatrix} 9 \\ -12 \end{pmatrix}$ or $\overrightarrow{CA} = \frac{1}{3}\begin{pmatrix} -9 \\ 12 \end{pmatrix}$ for $x = -5 + 3$ or $x = 4 - 6$ or for $y = 6 - 4$ or $y = -6 + 8$ or for $x + 5 = \frac{4-x}{2}$ or $6 - y = \frac{y+6}{2}$ or for $2\left(\overrightarrow{OC} - \begin{pmatrix} -5 \\ 6 \end{pmatrix}\right) = \begin{pmatrix} 4 \\ -6 \end{pmatrix} - \overrightarrow{OC}$ oe