Question	Answer	Marks	Partial Marks
9	Alternative $\int -\cos 6x\,\mathrm{d}x = -\frac{\sin 6x}{6} + c$	**B2**	**B1** for $\int -\cos 6x\,\mathrm{d}x = k\sin 6x + c$ where $k < 0$ or $k = \frac{1}{6}$ or $-\frac{\sin 6x}{6}$
	$\frac{1}{2} = -\frac{1}{6}\sin\frac{3\pi}{2} + c$ oe	**M1**	**FT** *their k* provided **B1** awarded
	$\int\left(-\frac{\sin 6x}{6} + \frac{1}{3}\right)\mathrm{d}x =$ $\frac{\cos 6x}{36} + \frac{1}{3}x + A$	**M2**	**FT** $\textit{their}\,k\sin 6x + \textit{their}\,c$ provided at least **B1** awarded **M1** for $m\cos 6x + \left(\textit{their}\frac{1}{3}\right)x + A$ where $m > 0$ or $m = -\frac{1}{36}$
	$\frac{13\pi}{12} = \frac{\cos\frac{3\pi}{2}}{36} + \frac{1}{3}\left(\frac{\pi}{4}\right) + A$	**M1**	**FT** *their m* and *their c*
	$y = \frac{\cos 6x}{36} + \frac{1}{3}x + \pi$ oe cao	**A1**	
10(a)	$\overrightarrow{AB} = \begin{pmatrix}4\\8\end{pmatrix}$	**B1**	
	$\sqrt{4^2 + 8^2}$	**M1**	**FT** *their* $\begin{pmatrix}4\\8\end{pmatrix}$
	$\frac{1}{\sqrt{80}}\begin{pmatrix}4\\8\end{pmatrix}$ oe isw	**A1**	**FT** provided working shown
10(b)	$\begin{pmatrix}6\\-5\end{pmatrix} = \frac{1}{2}\begin{pmatrix}10+x\\3+y\end{pmatrix}$ oe	**M1**	
	$x = 2,\ y = -13$	**A1**	

Question	Answer	Marks	Partial Marks
10(c)	$\overrightarrow{OE} = \frac{1}{1+\lambda}\begin{pmatrix}12\\7\end{pmatrix}$ oe seen	**B1**	
	Solves *their* $\frac{7}{1+\lambda} = 3$	**M1**	
	$\lambda = \frac{4}{3}$ oe	**A1**	
	Alternative $\overrightarrow{OE} = \begin{pmatrix}x\\3\end{pmatrix}$ $\frac{12}{7} = \frac{x}{3}$ $x = \frac{36}{7}$	**(B1)**	
	$\frac{1+\lambda}{1} = \frac{12}{36/7}$	**(M1)**	**FT** *their x*
	$\lambda = \frac{4}{3}$	**(A1)**	
11(a)(i)	$1 + d$, $1 + 7d$, $1 + 43d$ soi	**B1**	
	$[r =]$ *their* $\frac{1+7d}{1+d} =$ *their* $\frac{1+43d}{1+7d}$	**M2**	**FT** *their* ratios of terms provided in terms of a and d **M1 FT** for either $[r =] \frac{1+7d}{1+d}$ or $[r] = \frac{1+43d}{1+7d}$
	Simplifies to $6d^2 - 30d = 0$ oe nfww	**A1**	
	Verifies that $d = 5$ by substitution or factorises and solves to obtain $d = 5$ only	**A1**	