Question	Answer	Marks	Partial Marks
8(b)	Within a complete expression: Correct change of base to a: $\log_{\sqrt{b}} 9a = \dfrac{\log_a 9a}{\log_a \sqrt{b}}$ Correct use of power law: $\log_a \sqrt{b} = \dfrac{1}{2}\log_a b$ Correct use of addition/multiplication law: $\log_a 9a = \log_a 9 + \log_a a$ Correct use of $\log_a a = 1$	**M3**	**M2** for 2 or 3 correct steps within complete expression or **M1** for 1 correct step within complete expression
	leading to $2 + 3\log_a 9$. nfww	**A1**	
9	$\int \sin\left(6x - \dfrac{\pi}{2}\right) \mathrm{d}x = -\dfrac{\cos\left(6x - \dfrac{\pi}{2}\right)}{6} + c$	**B2**	**B1** for $\int \sin\left(6x - \dfrac{\pi}{2}\right) \mathrm{d}x = k\cos\left(6x - \dfrac{\pi}{2}\right) + c$ where $k < 0$ or $k = \dfrac{1}{6}$ or $-\dfrac{1}{6}\cos\left(6x - \dfrac{\pi}{2}\right)$
	$\dfrac{1}{2} = -\dfrac{1}{6}\cos\left(\dfrac{6\pi}{4} - \dfrac{\pi}{2}\right) + c$	**M1**	**FT** *their k* provided **B1** awarded
	$\int \left(-\dfrac{\cos\left(6x - \dfrac{\pi}{2}\right)}{6} + \dfrac{1}{3}\right) \mathrm{d}x$ $= -\dfrac{\sin\left(6x - \dfrac{\pi}{2}\right)}{36} + \dfrac{1}{3}x + A$	**M2**	**FT** $\textit{their}\, k\cos\left(6x - \dfrac{\pi}{2}\right) + \textit{their}\, c$ provided at least **B1** awarded **M1** for $m\sin\left(6x - \dfrac{\pi}{2}\right) + \left(\textit{their}\, \dfrac{1}{3}\right)x + A$ where $m < 0$ or $m = \dfrac{1}{36}$
	$\dfrac{13\pi}{12} = -\dfrac{1}{36}\sin\left(\dfrac{6\pi}{4} - \dfrac{\pi}{2}\right) + \dfrac{1}{3}\left(\dfrac{\pi}{4}\right) + A$	**M1**	**FT** *their m* and *their c* provided at least **M1** awarded
	$y = -\dfrac{\sin\left(6x - \dfrac{\pi}{2}\right)}{36} + \dfrac{1}{3}x + \pi$ oe cao	**A1**	

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**	