Question	Answer	Marks	Partial Marks
5(b)	$e^{2t-1-(5t-3)}=5$ or $e^{5t-3-(2t-1)}=\frac{1}{5}$ oe	**M1**	
	$e^{2-3t}=5$ or $e^{3t-2}=\frac{1}{5}$	**A1**	
	$2-3t=\ln 5$ or $3t-2=\ln\frac{1}{5}$	**M1**	**FT** *their* $e^{a-bt}=5$ or *their* $e^{ct-d}=\frac{1}{5}$ where a, b, c and d are positive integers
	$t=\frac{2-\ln 5}{3}$ or $t=\frac{2+\ln 0.2}{3}$ or 0.13[0] oe	**A1**	
	Alternative method		
	$\ln e^{2t-1}=\ln 5+\ln e^{5t-3}$ oe	**(M1)**	
	$(2t-1)[\ln e]=\ln 5+(5t-3)[\ln e]$ oe	**(A1)**	
	$5t-2t=3-1-\ln 5$ oe	**(M1)**	**Dep** on one correct log law applied with at most one sign error
	$t=\frac{2-\ln 5}{3}$ or $t=\frac{2+\ln 0.2}{3}$ or 0.13[0] oe	**(A1)**	
6(a)	$\left(\sqrt{6}-\sqrt{2}\right)^2+\left(\sqrt{6}+\sqrt{2}\right)^2-2\left(\sqrt{6}-\sqrt{2}\right)\left(\sqrt{6}+\sqrt{2}\right)\cos 60$	**M1**	
	$6+2-2\sqrt{12}+6+2+2\sqrt{12}-2\times(6-2)\times\frac{1}{2}$	**M1**	Condone one error in expansion of brackets
	$[BC=]2\sqrt{3}$ isw	**A1**	
6(b)	$\frac{\textit{their}\,2\sqrt{3}}{\sin 60}=\frac{\sqrt{6}+\sqrt{2}}{\sin ACB}$ or $\frac{\textit{their}\,2\sqrt{3}}{\frac{\sqrt{3}}{2}}=\frac{\sqrt{6}+\sqrt{2}}{\sin ACB}$	**M1**	Condone other letters for ACB
	$\sin ACB=\left(\sqrt{6}+\sqrt{2}\right)\times\frac{\sqrt{3}}{2}\times\frac{1}{2\sqrt{3}}=\frac{\sqrt{6}+\sqrt{2}}{4}$	**A1**	**A0** if necessary brackets missing unless clearly recovered

Question	Answer	Marks	Partial Marks
6(c)	$\frac{\sqrt{6}+\sqrt{2}}{4}=\frac{x}{\sqrt{6}-\sqrt{2}}$ or $\frac{1}{2}\times \textit{their}\, 2\sqrt{3}\times x=$ $\frac{1}{2}\times\left(\sqrt{6}-\sqrt{2}\right)\times\left(\sqrt{6}+\sqrt{2}\right)\times\sin 60$ [where x is the perpendicular from A to BC]	**M1**	Complete method
	$x=\frac{\left(\sqrt{6}-\sqrt{2}\right)\left(\sqrt{6}+\sqrt{2}\right)}{4}=\frac{6-2}{4}=1$ or $x=\frac{(6-2)}{2\sqrt{3}}\times\frac{\sqrt{3}}{2}=\frac{4}{4}=1$	**A1**	
7(a)	$\left[\frac{\mathrm{d}y}{\mathrm{d}x}=\right]\frac{1}{2}\mathrm{e}^{2x}-(x+1)^{-1}+\frac{5}{2}$ oe	**B3**	**M2** for $\frac{1}{2}\mathrm{e}^{2x}-(x+1)^{-1}+c$ oe or **M1** for any two terms correct from $\frac{1}{2}\mathrm{e}^{2x}$, $-(x+1)^{-1}$, $+c$
7(b)	$[y=]\frac{1}{4}\mathrm{e}^{2x}-\ln(x+1)$	**M1**	
	$+\textit{their}\,\frac{5}{2}\times x+\mathrm{d}$	**M1**	**FT** *their c* from **(a)**, providing $c\neq 0$
	$[y=]\frac{1}{4}\mathrm{e}^{2x}-\ln(x+1)+\frac{5}{2}x+\frac{15}{4}$ oe	**A1**	