Question	Answer	Marks	Guidance
8(b)	$2\sqrt{3}-\frac{2\pi}{3}$ or $\frac{6\sqrt{3}-2\pi}{3}$ oe nfww	**6**	**B5** correct calculation that simplifies to give shaded area e.g. $\left(\frac{4\pi}{3}-\sqrt{3}\right)-\left(2\pi-3\sqrt{3}\right)$ OR **B1** for sector AOB: $\frac{1}{2}\times 2^2\times\frac{2\pi}{3}$ oe **B1** for ΔAOB or ΔAOQ or ΔBOQ: $\frac{1}{2}\times 2^2\times\sin\frac{2\pi}{3}$ or $\frac{1}{2}\times 2\times 2\sqrt{3}\sin\frac{\pi}{6}$ oe **B1** for sector AQB: $\frac{1}{2}\times\left(2\sqrt{3}\right)^2\times\frac{\pi}{3}$ oe **B1** for ΔAQB: $\frac{1}{2}\left(2\sqrt{3}\right)^2\sin\frac{\pi}{3}$ oe OR **B2 FT** *their* exact angles for a correct calculation for any two of these areas OR **B2** for sector AOB: 4.188; ΔAOB or ΔAOQ or ΔBOQ: 1.732; sector AQB: 6.282; ΔAQB: 5.195[5] from using 1.047 rads OR **B1FT** *their* exact angles for a correct calculation for any one of these areas OR **B1** for one of these areas using 1.047 rads
9(a)	Points plotted at $\begin{array}{\|c\|c\|c\|c\|c\|}\hline \ln x & -0.5 & 1.5 & 2.5 & 3.5 \\ \hline \ln y & 0.5 & 1.5 & 2 & 2.5 \\ \hline\end{array}$ soi and single, ruled, straight line of best fit drawn	**B2**	**B1** for at least 3 correctly plotted points

Question	Answer	Marks	Guidance
9(b)	Uses linear points to find b = awrt 0.50 soi	**2**	**M1** for $b = \dfrac{2.5-0.5}{3.5+0.5}$ or $b = \dfrac{2.5-2}{3.5-2.5}$ oe OR **M1** for $0.5 = -0.5b + c$ oe **and** $2.5 = 3.5b + c$ oe **and** correctly eliminates c. If 0 scored, **SC1** for b = awrt 0.50 from use of given exponential equation
	Uses linear points to find $A = e^{0.7 \text{ to } 0.8}$ or 2.01 to 2.23 isw soi	**2**	**M1** for $\ln A = 0.75$ If 0 scored, **SC1** for A = 2.12 or 2.117[00…] or $e^{0.75}$ from use of given exponential equation
10(a)	Differentiates $\sqrt{2t^2+100}$: $\frac{1}{2}\left(2t^2+100\right)^{-\frac{1}{2}} \times 4t$ oe or differentiates $(2t^2+100)^{-\frac{1}{2}}$: $\left(-\frac{1}{2}\right)\left(2t^2+100\right)^{-\frac{3}{2}} \times 4t$	**B2**	**B1** for $\frac{1}{2}\left(2t^2+100\right)^{-\frac{1}{2}} \times \mathrm{f}\left(t\right)$ OR for $\left(-\frac{1}{2}\right)\left(2t^2+100\right)^{-\frac{3}{2}} \times \mathrm{f}\left(t\right)$ where f(t) is a function of t
	Correct structure of the quotient rule: $\dfrac{\left(\sqrt{2t^2+100}\right)(10)-(10t+100)\left(\frac{1}{2}\left(2t^2+100\right)^{-\frac{1}{2}} \times 4t\right)}{\left(\sqrt{2t^2+100}\right)^2}$ OR Correct structure of product rule applied to $(10t+100)(2t^2+100)^{-\frac{1}{2}}$: $(10t+100)\left(-\frac{1}{2}\left(2t^2+100\right)^{-\frac{3}{2}} \times 4t\right) + 10\left(2t^2+100\right)^{-\frac{1}{2}}$	**M1**	**FT** *their* $\frac{\mathrm{d}}{\mathrm{d}x}\left(\sqrt{2t^2+100}\right)$ or *their* $\frac{\mathrm{d}}{\mathrm{d}x}\left(\left(2t^2+100\right)^{-\frac{1}{2}}\right)$ as appropriate