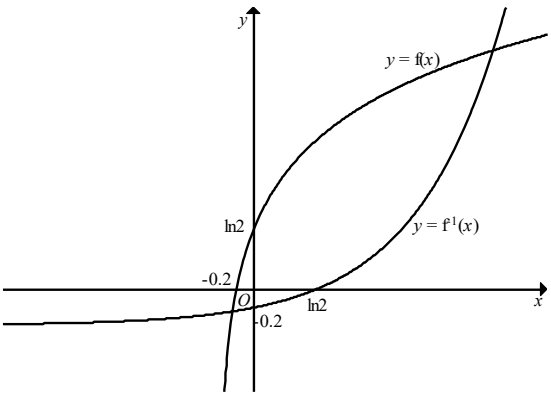
Question	Answer	Marks	Guidance
6	$\frac{dy}{dx} = 3\sec^2 3x$	**2**	**M1** for $a\sec^2 3x$
	When $x = \frac{\pi}{12}$, $y = 2$	**B1**	
	When $x = \frac{\pi}{12}$, $\frac{dy}{dx} = 6$	**M1**	
	Gradient of perpendicular is $-\frac{1}{6}$	**M1**	For $-\frac{1}{their\ \frac{dy}{dx}}$, must be numeric
	Equation of normal $y - 2 = -\frac{1}{6}\left(x - \frac{\pi}{12}\right)$	**M1**	For attempt at a normal equation using *their* $-\frac{1}{6}$ and 2
	Area of triangle = 12	**2**	**M1 dep** for attempt at correct area using *their* 2 and *their* $12 + \frac{\pi}{12}$
7	$-\frac{1}{2}(2-3x)^{\frac{2}{3}}$	**2**	**M1** for $a(2-3x)^{\frac{2}{3}}$, $a \neq -\frac{1}{2}$ Allow unsimplified
	When $x = -2$, $\frac{dy}{dx} = -6$ leading to $c = -4$	**2**	**M1 Dep** for correct attempt to find the value of the arbitrary constant
	$\frac{1}{10}(2-3x)^{\frac{5}{3}}$ nfww	**2**	**M1** for $b(2-3x)^{\frac{5}{3}}$, $b \neq \frac{1}{10}$ Allow unsimplified
	When $x = -2$, $y = 10.2$ leading to $d = -1$	**M1**	**Dep** on previous M mark for attempt to find the value of a second arbitrary constant
	$y = \frac{1}{10}(2-3x)^{\frac{5}{3}} - 4x - 1$	**A1**	
8(a)	$\begin{pmatrix} -40 \\ 42 \end{pmatrix}$	**B1**	Allow $2\begin{pmatrix} -20 \\ 21 \end{pmatrix}$

Question	Answer	Marks	Guidance
8(b)	$\begin{pmatrix}5\\-3\end{pmatrix}+\begin{pmatrix}-40\\42\end{pmatrix}t$	**B1**	**FT** on *their* answer to (a), must be numeric but not $\begin{pmatrix}-20\\21\end{pmatrix}$
8(c)	$\begin{pmatrix}-35t+4\\44t-2\end{pmatrix}-\begin{pmatrix}5-40t\\-3+42t\end{pmatrix}$	**M1**	Allow if in the incorrect order, **FT** on *their* (b), must have correct structure
	$\begin{pmatrix}5t-1\\2t+1\end{pmatrix}$	**A1**	
8(d)	$AB=\sqrt{(5t-1)^2+(2t+1)^2}$	**M1**	For attempt at modulus and square root using *their* answer to (c)
	$\sqrt{29t^2-6t+2}$	**A1**	
8(e)	$29t^2-6t-4=0$	**M1**	For attempt to solve the square of *their* answer to (d) $-6=0$
	0.49 only	**A1**	
9(a)(i)	-0.4	**B1**	
9(a)(ii)	$\mathrm{f}(x)\in\mathbb{R}$ oe	**B1**	
9(a)(iii)	$x=\ln(5y+2)$ oe $\mathrm{e}^x=5y+2$ oe	**M1**	For a correct attempt to find the inverse
	$\mathrm{f}^{-1}(x)=\dfrac{\mathrm{e}^x-2}{5}$	**A1**	Must be in the correct form
	$x\in\mathbb{R}$	**B1**	
9(a)(iv)		**4**	**B1** for two correctly shaped graphs in the correct quadrants **B1** for a correct graph for $y=\mathrm{f}(x)$ with correct intercepts **B1** for a correct graph for $y=\mathrm{f}^{-1}(x)$ with correct intercepts **B1** all correct with symmetry implied, exact intercepts and two points of intersection