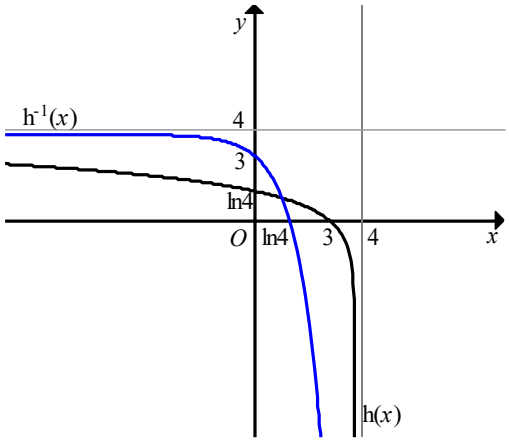
Question	Answer	Marks	Partial Marks
6	$\frac{dy}{dx} = 10e^{2x}$	**B1**	
	[At A, m =] 10	**B1**	
	[At A, y =] 2	**B1**	
	[Equation tangent is] $y = 10x + 2$ oe	**B1**	
	$AB^2 = \left(\frac{-their2}{their10}\right)^2 + (their\,2)^2$ oe	**M1**	providing *their* 10 is derived using differentiation
	[AB =] 2.01 or 2.009[9…] nfww, isw	**A1**	
7	$\frac{d(4x^3 + 2\sin 8x)}{dx} = 12x^2 + 16\cos 8x$ soi	**B2**	**B1** for $12x^2 + k\cos 8x$, where $k > 0$
	Correct quotient rule: $\frac{(1-x)\left(their\left(12x^2 + 16\cos 8x\right)\right) - (4x^3 + 2\sin 8x)(-1)}{(1-x)^2}$	**M1**	or applies correct product rule to $(4x^3 + 2\sin 8x)(1-x)^{-1}$: $(4x^3 + 2\sin 8x)\left(-(1-x)^{-2} \times -1\right) +$ $\left(their(12x^2 + 16\cos 8x)\right)(1-x)^{-1}$
	Fully correct derivative; isw	**A1**	**FT** *their* $12x^2 + 16\cos 8x$
	$\frac{\delta y}{h} = their\left(\left.\frac{dy}{dx}\right\|_{x=0.1}\right)$	**M1**	
	14.3h or 14.29[54...]h with coefficient rot to 4 or more figs isw	**A1**	
8(a)(i)	$f \leqslant -1$	**1**	

Question	Answer	Marks	Partial Marks
8(a)(ii)	$x = -2$ nfww	**3**	**M1** for $\left[x = \text{f}\left(\frac{2\pi}{3}\right) =\right] \sec\left(\frac{2\pi}{3}\right)$ or $\sec^{-1} x = \frac{2\pi}{3}$ **A1** for $\frac{1}{\cos\left(\frac{2\pi}{3}\right)}$ OR **M1** for a complete attempt to find $\text{f}^{-1}(x)$; includes swapping the variables **A1** for $\text{f}^{-1}(x) = \cos^{-1}\left(\frac{1}{x}\right)$
8(a)(iii)	$\frac{\pi}{2} < x < \frac{3\pi}{2}$	**1**	
8(a)(iv)	$\text{gf}(x) = 3(\sec^2 x - 1)$	**B1**	
	$3\tan^2 x = 1$ or $\frac{1}{\cos^2 x} = \frac{4}{3}$ oe	**M1**	
	$\tan x = [\pm]\sqrt{\frac{1}{3}}$ oe or $\cos x = [\pm]\sqrt{\frac{3}{4}}$ oe and solves for x, soi	**M1**	
	$x = \frac{5\pi}{6}, \frac{7\pi}{6}$ and no other solutions	**A2**	**A1** for one correct solution, condoning extras
8(b)	Correct diagram with intercepts indicated and asymptotes shown.  	**4**	**B1** for correct shape for h; may not be over correct domain but must have positive y-intercept and x-intercept and appear to tend to an asymptote in the 4th quadrant **B1** for 3 and ln4 correctly marked; must have attempted correct shape **B1** for the position of the vertical asymptote indicated; must have attempted correct shape **B1** for h^{-1} the reflection of *their* h in the line $y = x$ **Maximum of 3 marks if not fully correct**

Question	Answer	Marks	Partial Marks
9(a)	$\frac{x+4}{\sqrt[3]{x}} = x^{\frac{2}{3}} + 4x^{-\frac{1}{3}}$	**B1**	
	$\left[\frac{3}{5}x^{\frac{5}{3}} + 6x^{\frac{2}{3}}\right]_1^8$	**M1**	**FT** providing one term is correct in $x^{\frac{2}{3}} + 4x^{-\frac{1}{3}}$
	$\frac{3}{5}(8)^{\frac{5}{3}} + 6(8)^{\frac{2}{3}} - \left(\frac{3}{5}(1)^{\frac{5}{3}} + 6(1)^{\frac{2}{3}}\right) = 36.6$	**A1**	