

Question			Answer	Marks	AO	Guidance	
10	(a)	(i)	$\frac{1}{2}$ oe	B1 [1]	1.2	State correct scale factor	
	(a)	(ii)	parallel to the x -axis / in the x -direction	B1	2.5	Identify direction – correct language needed	Allow ‘horizontal’ B0 for ‘in’, ‘on’ or ‘along’ the x -axis, or for right / left Could be implied by $\begin{pmatrix} k \\ 0 \end{pmatrix}$

Question			Answer	Marks	AO	Guidance	
			$\frac{1}{2}$ oe	B1 [2]	1.2	Correct magnitude of translation Do not penalise mentioning the stretch from (a)(i) again in (a)(ii)	Not dep on previous B1 , but must have indicated horizontal translation in some way, including informal language $\begin{pmatrix} \frac{1}{2} \\ 0 \end{pmatrix}$ is B2
10	(b)		e^{-1}	B1 [1]	3.1a	State correct scale factor	Any exact equiv
10	(c)		$\frac{dy}{dx} = 2e^{2x-1}$ at $x = \frac{1}{2}$, gradient = 2 oe $y = e^0 = 1$ $y - 1 = 2(x - \frac{1}{2})$ $y = 2x$ AG	M1 A1 B1 A1 [4]	1.1 2.1 1.1 2.1	State either correct derivative or $\frac{1}{2}e^{2x-1}$ Obtain correct gradient, following correct derivative State, or use, correct y-value Use correct numerical m , x and y values to obtain given equation of tangent	‘Show that’ so correct derivative must be seen first Could also use $y = mx + c$ to obtain $c = 0$ and hence given equation
10	(d)		$\int e^{2x-1} dx = \frac{1}{2}e^{2x-1}$ $\left[\frac{1}{2}e^{2x-1} \right]_0^{\frac{1}{2}} = \frac{1}{2}(e^0 - e^{-1})$	B1 M1*	1.1 1.1a	State correct integral Attempt use of correct limits	Any equiv exact form Could be in terms of u if using substitution Correct order and subtraction, working with exact values Could be using u limits (must be -1 and 0)

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			$\frac{1}{2}(1 - e^{-1}) - \frac{1}{2} \times 1 \times \frac{1}{2}$ $\frac{1}{4} - \frac{1}{2e}$	M1dep* A1 [4]	3.1a 1.1	Attempt area of region ie their definite integral minus attempt at area of triangle Could be implied by their definite integral minus 0.25 www Must be using exact values Correct area, in any exact form with like terms combined	Area of a triangle must either be $\frac{1}{2} \times \frac{1}{2} \times \text{their } y$ or from $\int_0^{0.5} 2x dx$ Must have worked exactly throughout
			Alternative method (integrating wrt y) $\int \left(\frac{1}{2} \ln y + \frac{1}{2} \right) dy = \frac{1}{2} y \ln y$ $\left[\frac{1}{2} y \ln y \right]_{e^{-1}}^1 = \left(\frac{1}{2} \ln 1 - \frac{1}{2} e^{-1} \ln e^{-1} \right)$ $\frac{1}{2} \times 1 \times \frac{1}{2} - \frac{1}{2} e^{-1}$ $\frac{1}{4} - \frac{1}{2e}$	M1 M1* M1dep* A1 [4]		Change subject and attempt full integration by parts(using correct parts) Attempt use of correct limits Attempt area of region ie attempt at area of triangle minus their definite integral Could be implied by 0.25 minus their definite integral www Must be using exact values Correct area, in any exact form with like terms combined	Correct order and subtraction, working with exact values Must use correct y limits Area of a triangle must either be $\frac{1}{2} \times \frac{1}{2} \times \text{their } y$ or from $\int_0^1 \frac{1}{2} y dy$ Must have worked exactly throughout