Question	Answer	Marks	Guidance
6(b)	$\ln y = x^2 \ln b + \ln A$	**B1**	May be seen in part **(a)**
	Gradient = $\ln b$ $(\ln b = 0.7)$ $b = 2$	**2**	**M1** for attempt to find the gradient and equate to $\ln b$ Gradient must be from linear graph of ln*y* vs x^2
	Intercept = $\ln A$ $(\ln A = 1.95)$ $A = 7$	**2**	**M1** for attempt to use intercept
6(c)	When $y = 200$, $\ln y = 5.3$ $x^2 = 4.85$ $x = 2.2$ (allow 2.1 or 2.3)	**2**	**M1** for using *their* linear graph with $\ln y = 5.3$ to obtain a value for x^2 **A0** for $x = \pm 2.2$ if –2.2 is not rejected
7(a)	$x^2 + 3x^2 \ln x$	**2**	**M1** for attempt to differentiate a product Allow unsimplified for 2 marks
7(b)	$\int 3x^2 \ln x \, dx = x^3 \ln x - \int x^2 dx$	**B1**	
	$\left[x^3 \ln x - \frac{x^3}{3} \right]_1^2$ $8\ln 2 - \frac{8}{3} + \frac{1}{3}$	**M1**	Dep on **B1 M1** for correct use of limits
	$\ln 256 - \frac{7}{3}$	**2**	**A1** for one correct term
8(a)	$5x^2 + 3x - 14 = 0$ or $5y^2 - 4y - 57 = 0$	**M1**	soi
	$x = \frac{7}{5}$, $y = \frac{19}{5}$ $x = -2$, $y = -3$	**3**	**M1** for attempt to solve *their* quadratic to obtain either *x* = ... or *y* = … **A1** for one correct pair both *x* or both *y* or one correct (*x*, *y*) point
	Midpoint $\left(-\frac{3}{10}, \frac{2}{5} \right)$	**B1**	Must be correct midpoint
	Gradient of perpendicular $-\frac{1}{2}$	**B1**	Must be correct
	Perp bisector: $y - \frac{2}{5} = -\frac{1}{2}\left(x + \frac{3}{10} \right)$	**M1**	Must be using *their* midpoint and a gradient = $-\frac{1}{2}$
	$k = -\frac{4}{5}$	**A1**	

© Cambridge University Press & Assessment 2024