

Question	Answer	Marks	Guidance
(a)	Substitute $x = 4$ , equate to zero and attempt solution	M1	
	Obtain $a = -7$	A1	
	Divide by $x - 4$ at least as far as the $x$ term	M1	or use of identity or by inspection
	Obtain $2x^2 + x + 1$ and conclude $(x - 4)(2x^2 + x + 1)$	A1	
	<b>Alternative method for question (a)</b>		
	Divide by $x - 4$ at least as far as the $x$ term	M1	
	Equate the remainder to zero	M1	
	Obtain $a = -7$	A1	
	Obtain $2x^2 + x + 1$ and conclude $(x - 4)(2x^2 + x + 1)$	A1	
		4	

Question	Answer	Marks	Guidance
(b)	Apply logarithms and use power law for $e^{3y} = 4$	<b>M1</b>	
	Obtain $\frac{1}{3} \ln 4$ or exact equivalent	<b>A1</b>	
	Use discriminant $[=1-8=-7]$ or equivalent to show no other roots	<b>B1</b>	AG – necessary detail needed
		<b>3</b>	

