8(a)	Attempts to use, $\log_a b = \dfrac{\log_c b}{\log_c a}$	M1
	$y = \log_x 3 = \dfrac{\log_e 3}{\log_e x} = \dfrac{\ln 3}{\ln x}$	M1
	$\dfrac{dy}{dx} = -1 \times (\ln 3) \times (\ln x)^{-2} \times \dfrac{1}{x} = -\dfrac{\ln 3}{x(\ln x)^2}$	M1
	Substitute $x = 3$ $-\dfrac{\ln 3}{3(\ln 3)^2} = -\dfrac{1}{3(\ln 3)} = -\dfrac{1}{\ln 27}$	M1
	The normal has gradient $\ln 27$ and $P = (3,1)$	M1
	Equation of normal is given by, $y - 1 = \ln 27\,(x - 3)$	M1
	Begins process to solve simultaneously with curve, e.g. $\dfrac{\ln 3}{\ln x} - 1 = x \ln 27 - 3 \ln 27$	M1
	Begins process to rearrange for $\ln 3$ e.g. $\ln 3 - \ln x = x \ln x \ln 27 - 3 \ln x \ln 27$	M1
	Full process resulting in given form $\ln 3 = \ln x\,(1 + x \ln 27 - 3 \ln 27)$	A1
		[9]
8(b)	Finds iterative formula, $\ln x = \dfrac{\ln 3}{1 + x \ln 27 - 3 \ln 27}$ $x = e^{\frac{\ln 3}{1 + x \ln 27 - 3 \ln 27}}$ $x_{n+1} = e^{\left(\frac{\ln 3}{1 + x_n \ln 27 - 3 \ln 27}\right)}$	M1
	Identifies valid starting value, e.g. $x_0 = 0.5$	M1
	Uses iterative formula to find x-coordinate e.g. $x_1 = 0.8592\ldots$ $x_2 = 0.8341\ldots$ $\ldots$	A1
	Critical values $x_3 = 0.8361$ and $x_4 = 0.8360$ must be seen Thus $x = 0.836$	
	$y = \dfrac{\ln 3}{\ln(0.836)} = -6.133$	A1
		[4]
		[13 marks]