

Question			Answer	Marks	AO	Guidance	
8	(a)		$e^x = 1 + 2e^y \Rightarrow 2(1 + 2e^y) + 3e^{2y} = 41$ therefore $3e^{2y} + 4e^y - 39 = 0$ (answer given)	B1 [1]	2.1	eg rearrange, substitute and obtain the correct simplified 3-term quadratic equation in e^y www	AG
8	(b)		DR $(3e^y + 13)(e^y - 3)$ $e^y = 3$ only as $e^y \neq -\frac{13}{3}$ $e^y = 3 \Rightarrow y = \ln 3$ $e^x - 2(3) = 1$ or $2e^x + 3(3)^2 = 41$ or $e^x - 2(e^{\ln 3}) = 1$ or $2e^x + 3(e^{\ln 3})^2 = 41$ $P(\ln 7, \ln 3)$ or $x = \ln 7, y = \ln 3$ only	B1 B1 M1 M1 A1 [5]	1.1 2.3 1.1 1.1 1.1	Correctly factorises the given 3-term quadratic in e^y or u Correct value of e^y stated and other root rejected. Crossing out rejected answer is acceptable for B1 Correctly solves their $e^y = a$ ($a > 0$) Substitute their value of e^y or y to obtain an equation in x only cao	Or $\frac{-4 \pm \sqrt{4^2 - 4(3)(-39)}}{2(3)}$ Both roots must appear and be correct