



Air maths tuition

Interact, engage and perform

## Exponential Equation | Past Paper Question | C3 Edexcel June 2013 Q6(b)

(b)  $2^x e^{3x+1} = 10$

Give your answer to (b) in the form  $\frac{a + \ln b}{c + \ln d}$  where  $a, b, c$  and  $d$  are integers. (5)

$$\begin{aligned}2^x e^{3x+1} &= 10 \\ \therefore \ln 2^x e^{3x+1} &= \ln 10 \\ \therefore \ln 2^x + \ln e^{3x+1} &= \ln 10 \\ \therefore x \ln 2 + (3x+1) \ln e &= \ln 10 \\ \therefore x \ln 2 + 3x + 1 &= \ln 10 \\ \therefore x(\ln 2 + 3) &= -1 + \ln 10\end{aligned}$$

$$\begin{aligned}\therefore x &= \frac{-1 + \ln 10}{3 + \ln 2} \\ &= \frac{a + \ln b}{c + \ln d}\end{aligned}$$

where  $a = -1, b = 10$   
 $c = 3, d = 2$

With the acknowledgement of [Exam Solutions](#).  
Find lots more revision sheets on [Air Maths Tuition](#).  
[This Video](#)



**Exam Solutions**  
m a t h s m a d e e a s y