**8 (a)** Using $y = 2^{2x}$ as a substitution, show that

$$16^x - 2^{(2x+3)} - 9 = 0$$

can be written as

$$y^2 - 8y - 9 = 0$$

**[2 marks]**

*Do not write outside the box*

**8 (b)** Hence, show that the equation

$$16^x - 2^{(2x+3)} - 9 = 0$$

has $x = \log_2 3$ as its only solution.

Fully justify your answer.

**[4 marks]**

**Turn over for the next question**