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]

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]