4 The nth term of an arithmetic series is u_n where

$$u_n = (n + 1)\ln 4$$

Given that the sum of the first n terms of the series is S_n

show that $S_n = \ln 2^{(n^2 + an)}$ where a is an integer whose value is to be found.

(5)

Question 4 continued

(Total for Question 4 is 5 marks)