7 **(a)** The first three terms of an arithmetic progression are $\lg 3$, $3\lg 3$, $5\lg 3$. Given that the sum to n terms of this progression can be written as $256\lg 81$, find the value of n. [5]

(b) DO NOT USE A CALCULATOR IN THIS PART OF THE QUESTION.

The first three terms of a geometric progression are $\ln 256$, $\ln 16$, $\ln 4$. Find the sum to infinity of this progression, giving your answer in the form $p \ln 2$. [4]