

4 (a) The first four terms of a sequence are 2, 3, 0, 3 and the subsequent terms are given by $a_{k+4} = a_k$.

(i) State what type of sequence this is. [1]

(ii) Find $\sum_{k=1}^{200} a_k$. [1]

(b) A different sequence is given by $u_n = b^n$ where b is a constant and $n \geq 1$.

(i) State the set of values of b for which this is a divergent sequence. [2]

(ii) In the case where $b = \frac{1}{3}$, find the sum of all the terms in the sequence. [2]