

Consider the following sequence

$$(a_n)_{n=1}^{\infty} = (1, 1, 2, 1, 2, 3, 1, 2, 3, 4, 1, 2, 3, 4, 5, 1, \dots).$$

Find all pairs (α, β) of positive real numbers such

$$\text{that } \lim_{n \rightarrow \infty} \frac{\sum_{k=1}^n a_k}{n^{\alpha}} = \beta.$$