

1) Let $\{a_n\}_{n=0}^{\infty}$ be the sequence defined by $a_n = 2n + 1$. Define a new sequence $\{b_k\}_{k=0}^{\infty}$ by taking every other term in the first sequence. That is, the new sequence is given by:

$$a_0, a_2, a_4, a_6, \dots$$

Find an explicit formula for b_k .

2) Concatenate the string "abcd" with the string "gogg".

3) Does your answer to #2 include the string "dog" as a substring?