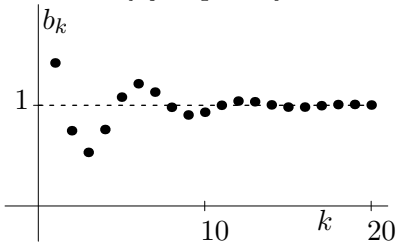
3. [8 points] Let b_k be given by the graph below (as $k \to \infty$, the behavior shown in the graph continues as is suggested by the figure). For each part of the problem below, circle all of the given statements that are true and *briefly* explain your answers.



a. [4 points] Consider the sequence b_k.

-the sequence b_k could be defined by $b_k = 1 - \frac{(-1)^k}{k}$

-the sequence b_k can only be defined recursively

-it is impossible to find a recursive definition for the sequence b_k

-the sequence b_k converges

-the sequence b_k diverges

-it is not possible to determine whether the sequence b_k converges or diverges

b. [4 points] Consider the series $\sum_{k=1}^{\infty} b_k$.

-the sequence of partial sums S_n of the series converges

-the sequence of partial sums S_n of the series diverges

-it is not possible to determine whether the sequence of partial sums S_n of the series converges or diverges

-the series $\sum_{k=1}^{\infty} b_k$ converges

-the series $\sum_{k=1}^{\infty} b_k$ diverges

-it is not possible to determine whether the series $\sum_{k=1}^{\infty} b_k$ converges or diverges