E7.31 [ODY] *(Proposed on 2022-12-13)* Find two sequences $(a_n)_n, (b_n)_n$ with $a_n, b_n > 0$ such that $\sum_{n=0}^{\infty}(-1)^n a_n$ is convergent, $\sum_{n=0}^{\infty}(-1)^n b_n$ is non-convergent, and $\lim_{n\to\infty} a_n/b_n = 1$.

Solution 1. [ODZ]