(1) (15 Points) Assume \((s_n)\) is a bounded sequence of real numbers with
\[
\limsup(s_n) = 5.
\]
Use your knowledge of the properties of and the theorems concerning \(\limsup\) to prove that there are only a finite number of terms of \(s_n\) in the given sequence satisfying
\[
s_n > 5.0001.
\]
State all results and theorems used clearly and correctly.