

## Quiz–Sequences

---

Suppose that the nonnegative increasing sequence  $a_n$  converges to  $L$  (that is,  $\lim_{n \rightarrow \infty} a_n = L$ ). Use the definition of limit to show that  $\{a_n\}$  is bounded (there exists some number  $M > 0$  such that  $|a_n| < M$  for all  $n$ ), or give an example of a convergent nonnegative increasing sequence which is not bounded.

Show all work and clearly mark your final answer. No calculators/notes allowed. Partial credit will be given for correctly explaining any steps you're unable to carry out, as well as demonstrating correct methods with computational errors.