1A

Claim: If a real sequence converges then it is bounded.

    Proof: Let a_n converge to a. Then given an $\epsilon > 0$ there is an N such that for any $n > N$, $|a_n - a| < \epsilon$. By the triangle equality we can bound the sequence after N by the quantity $m = |a| + \epsilon$. Letting $M = max\{a_1, a_2, \ldots, a_N, m\}$, we have found a bound for the entire sequence. $\heartsuit$