

2.3.10 If $(a_n) \rightarrow 0$ and $|b_n - b| \leq a_n$, then show that $(b_n) \rightarrow b$.

Proof: Since $(a_n) \rightarrow 0$ then for all $\epsilon > 0$ there exists $N \in \mathbb{N}$ such that for all $n \geq N$, $|a_n| < \epsilon$. Therefore $a_n < \epsilon$. Thus $|b_n - b| < \epsilon$.