

Proof Of Bolzano Weierstrass Theorem Planetmath



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The proof of the Bolzano-Weierstrass theorem is now simple: let (s_n) be a bounded sequence. By Lemma 2 it has a monotonic subsequence. By Lemma 2 it has a monotonic subsequence. By Lemma 1, the subsequence converges.

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The Bolzano-Weierstrass theorem is named after mathematicians Bernard Bolzano and Karl Weierstrass. It was actually first proved by Bolzano in 1817 as a lemma in the proof of the intermediate value theorem. Some fifty years later the result was identified as significant in its own right, and proved again by Weierstrass.

Bolzano-Weierstrass theorem - Wikipedia

Theorem. (Bolzano-Weierstrass) Every bounded sequence has a convergent subsequence. proof: Let (a_n) be a bounded sequence. Then, there exists an interval (α, β) that for all $\epsilon > 0$, $(\alpha - \epsilon, \alpha + \epsilon)$ either contains infinitely many of (a_n) .

Theorem. (Bolzano-Weierstrass) - USU

The Bolzano-Weierstrass Theorem. Therefore the subsequence (a_{n_k}) converges to ξ . Proof 2: Let (a_n) be a bounded sequence. By the The Monotone Subsequence Theorem, every sequence of real numbers has a monotonic subsequence. Let (a_{n_k}) be this monotonic subsequence.

The Bolzano-Weierstrass Theorem - Mathonline

A SHORT PROOF OF THE BOLZANO-WEIERSTRASS THEOREM Abstract. We present a short proof of the Bolzano-Weierstrass Theorem on the real line which avoids monotonic subsequences, Cantor's Intersection Theorem, and the Heine-Borel Theorem.

A short proof of the Bolzano-Weierstrass Theorem - uccs.edu

If S has a supremum, then for some x in S we have $x > \sup S - h$, and If S has a minimum, then for some x in S we have $x < \inf S + h$ The idea of the proof of the Bolzano-Weierstrass Theorem is to let S be the set of all of the terms in the sequence. Since this set is bounded it must have a least upper bound, s .

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