

# Nonstandard Analysis: Calculus without $\varepsilon$ and $\delta$

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Bentley Lounge Gray Hall

## Abstract

**Phantasy Definition:** A sequence  $(x_n)$  *converges* to  $L$  if for all very large  $n$ ,  $x_n$  is very close to  $L$ .

The familiar  $\varepsilon$ - $\delta$  definitions were introduced in order to place calculus (and analysis in general) on a firm footing. However, it is the above definition that corresponds to how we actually think. Can it be made rigorous? Yes. Moreover, many other flaky-looking definitions can be similarly de-flaked, often resulting in much simpler proofs than were possible before.

Most of this talk should be accessible to anyone who recalls the usual usage of the following symbols:  $\varepsilon$ ,  $\delta$ ,  $\exists$ ,  $\forall$ . The last part will require familiarity with compact sets.

Controversy guaranteed.

*Presented by*

THE AU MATH/STAT DEPARTMENT AND THE AU CHAPTER OF SIGMA XI

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