

Undergraduate Math Club
Fall 2006
2nd floor Nesbitt Common Room
November 16, 4:10-5:00pm
(free pizza and pop, as always)

Nonstandard Analysis: Calculus without ε and δ

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Abstract

Phantasy Definition: A sequence x_n *converges* to L if for all very large n , we have that x_n is very close to L .

The familiar ε - δ 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: ε , δ , \exists , and \forall . The last part of the talk will require casual familiarity with the notion of compactness.

Controversy guaranteed.