WHAT IS THE PURPOSE OF AN ELEMENTARY REAL ANALYSIS COURSE?

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The purpose of an elementary real analysis course is not to prepare anyone for a career in pure mathematics. It is to do something quite different, and quite difficult.

The purpose of an elementary real analysis course is to introduce students to (a) clear mathematical thinking; to (b) give extremely clear set of examples that are *universalisable* to many diverse areas of life not having anything to do with pure mathematics at all; (c) introduce them to the most valuable tools in terms of precise theorems that have extremely wide applicability. The opportunity here is to introduce the distinction between *mathematical substance* of model situations so that they can detect in their future mathematics-less life various situations in which they can see the mathematical situation staring at them, and give them confidence that they can be self-reliant and make progress in those situations without immediately calling up their friends and telling them that they are totally lost.

The purpose of elementary real analysis course is not to focus on pedantic issues of rigour from foundational set theory and obsession with various types of convergence and proving difficult abstract theorems useful for Topological Vector Spaces that arise in the latest issues of Functional Analysis that finally resolve the totally obscure gaps in Von Neumann's counterexample to the extremely impenetrable latest Swedish Genius who succeeded Hörmander and changed the wave front sets to arbitrary dimensional symplectic geometry and finally showed that all of partial differential equations can be seen as abstract generalised functionals on slightly less convex not not uniformly convex quasilinear spaces.

Those sorts of things do not belong in elementary real analysis courses. It's doubtful whether they belong anywhere, but that's a different issue.

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