

Nonstandard Analysis and Generalized Functions
Nathan Savir, Princeton University

Abstract:

Nonstandard Analysis is the study of the hyperreals, a field of numbers which is a superset of the reals. Hyperreal numbers are defined as sequences of real numbers, and binary relations are defined via an ultrafilter. This results in “nonstandard” entities such as infinitesimals. We will discuss the basic structure of these numbers and then consider the space of L^2 functions over the hyperreals. In conclusion, we will consider nonstandard methods of proof and applicability to the theory of generalized functions – in particular, to tempered distributions.