Title: No-where averagely differentiable functions: Baire category and the Takagi function.

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Dates: 30th October, 2012.

Abstract

We will extend the classical result that a typical (in the sense of Baire) continuous function is nowhere differentiable: the difference quotient of a continuous function on $[0, 1]$ is divergent even after being 'smoothened out' using iterated Cesaro averages of arbitrarily high orders. We then discuss the average differentiability of the Takagi function - this being a well known specimen of nowhere differentiability.