

A fair-bald gambling function that is simply singular
Richard Neidinger

Abstract

A singular function from $[0,1]$ onto $[0,1]$ is continuous, increasing, and never has a positive derivative (the derivative is zero almost everywhere and does not exist elsewhere). The graphs of such functions have fractal structure. For strictly increasing examples, derivative results are usually existential and are limited in saying exactly where the derivative exists and where it is zero. One classic example has been described as a probability of success in gambling scenario. We modify the scenario and produce a new graph where we can exploit the fractal structure to (almost completely) characterize where the derivative exists and where it is zero.