

Some applications of additional set-theoretical axioms in measure theory

Abstract

Intensive research in Mathematical analysis, theory of function and measure theory assume as a basis studying various paradoxical point sets. We consider certain types of interesting and important point sets on the real line, such as Vitali sets, Bernstein sets, Hamel bases, Luzin sets, Sierpinski sets. These classical pathological subsets of the real line are considered and their descriptive properties are investigated from the measure-theoretical view-point.

In this report we are dealing with over enumerated sets in Light of measure theory and ascertained some mutual relations between them. In particular, it is shown that there exists a translation invariant measure μ on \mathbb{R} extending the Lebesgue measure and such that all Sierpinski sets are measurable with respect to μ .