

Some applications of set-theoretical and algebraic methods to measurability of sets and functions

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It is well known that set-theoretical and algebraic methods play a significant role in various questions of real analysis and measure theory. For instance, the method of transfinite recursion, Bernstein's construction of some pathological sets, Sierpinski's functions with thick graphs, method of surjective homomorphisms, etc.

For two spaces (E_1, μ_1) and (E_2, μ_2) which are equipped with sigma-finite measures, we present some sufficient conditions for the existence a function $f : E_1 \rightarrow E_2$, whose graph is a $(\mu_1 \times \mu_2)$ -thick subset of $E_1 \times E_2$.