Hansell, Roger W.

First class functions with values in nonseparable spaces. (English) Zbl 0767.54010

Constantin Carathéodory: an international tribute. Vol. I, 461-475 (1991).

Summary: [For the entire collection see Zbl 0728.00003.]

Let $f : T \to X$ be a function with values in a metric space X. By a function base for f we mean a collection Γ of subsets of T such that, for any open set U in X, $f^{-1}(U)$ is a union of sets from Γ. Various types of first class functions, such as pointwise limits of sequences of continuous functions and functions whose restriction to any nonempty closed set has a point of continuity, are characterized in terms of the existence of certain kinds of function bases. This yields nonseparable versions of some classical theorems due to R. Baire. In many instances the proofs are more informative and simpler than their classical counterparts.

MSC:

54C50	Topology of special sets defined by functions
28A20	Measurable and nonmeasurable functions, sequences of measurable functions, modes of convergence
26A21	Classification of real functions; Baire classification of sets and functions

Keywords:

F_σ measurable functions; functions with point of continuity property; Baire class 1