

FUNCTIONS OF CLASS C^k WITHOUT DERIVATIVES

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Abstract

We describe a general axiomatic way to define functions of class C^k , $k \in \mathbf{N} \cup \{\infty\}$ on topological abelian groups. In the category of Banach spaces, this definition coincides with the usual one. The advantage of this axiomatic approach is that one can dispense with the notion of norms and limit procedures. The disadvantage is that one loses the derivative, which is replaced by a local linearizing factor. As an application we use this approach to define C^∞ functions in the setting of graded/super manifolds.
