

Smooth Functions and Maps

The book contains a consistent and sufficiently comprehensive theory of smooth functions and maps insofar as it is connected with differential calculus.

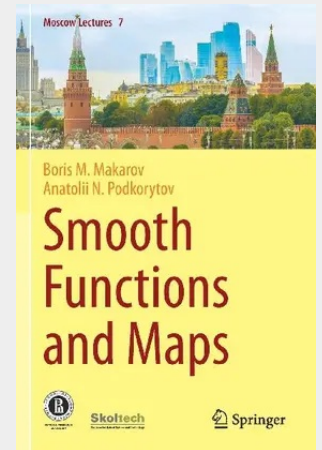
The scope of notions includes, among others, Lagrange inequality, Taylor's formula, finding absolute and relative extrema, theorems on smoothness of the inverse map and on conditions of local invertibility, implicit function theorem, dependence and independence of functions, classification of smooth functions up to diffeomorphism. The concluding chapter deals with a more specific issue of critical values of smooth mappings.

In several chapters, a relatively new technical approach is used that allows the authors to clarify and simplify some of the technically difficult proofs while maintaining full integrity. Besides, the book includes complete proofs of some important results which until now have only been published in scholarly literature or scientific journals (remainder estimates of Taylor's formula in a nonconvex area (Chapter I, §8), Whitney's extension theorem for smooth function (Chapter I, §11) and some of its corollaries, global diffeomorphism theorem (Chapter II, §5), results on sets of critical values of smooth mappings and the related Whitney example (Chapter IV).

The text features multiple examples illustrating the results obtained and demonstrating their accuracy. Moreover, the book contains over 150 problems and 19 illustrations.

Perusal of the book equips the reader to further explore any literature basing upon multivariable calculus.

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