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<<多维实分析（第1卷）>>

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前言

This book, which is in two parts, provides an introduction to the theory of vector- valued functions on Euclidean space. We focus on four main objects of study and in addition consider the interactions between these. Volume I is devoted to differentiation. Differentiable functions on Rn come first, in Chapters 1 through 3. Next, differentiable manifolds embedded in R are discussed, in Chapters 4 and 5. In Volume 11 we take up integration. Chapter 6 deals with the theory of n-dimensional integration over R. Finally, in Chapters 7 and 8 lower-dimensional integration over submanifolds of Rn is developed; particular attention is paid to vector analysis and the theory of differential forms, which are treated independently from each other. Generally speaking, the emphasis is on geometric aspects of analysis rather than on matters belonging to functional analysis.In presenting the material we have been intentionally concrete, aiming at a thorough understanding of Euclidean space. Once this case is properly understood, it becomes easier to move on to abstract metric spaces or manifolds and to infinitedimensional function spaces. If the general theory is introduced too soon, the reader might get con. fused about its relevance and lose motivation. Yet we have tried to organize the book as economically as we could, for instance by making use of linear algebra whenever possible and minimizing the number of arguments, always without sacrificing rigor. In many cases, a fresh look at old problems, by ourselves and others, led to results or proofs in a form not found in current analysis textbooks. Quite often, similar techniques apply in different parts of mathematics; on the other hand, different techniques may be used to prove the same result. We offer ample illustration of these two principles, in the theory as well as the exercises.

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内容概要

This book, which is in two parts, provides an introduction to the theory of vector- valued functions on Euclidean space. We focus on four main objects of study and in addition consider the interactions between these. Volume I is devoted to differentiation. Differentiable functions on Rn come first, in Chapters 1 through 3. Next , differentiable manifolds embedded in R are discussed, in Chapters 4 and 5. In Volume 11 we take up integration. Chapter 6 deals with the theory of n-dimensional integration over R. Finally, in Chapters 7 and 8 lower-dimensional integration over submanifolds of Rn is developed; particular attention is paid to vector analysis and the theory of differential forms, which are treated independently from each other. Generally speaking, the emphasis is on geometric aspects of analysis rather than on matters belonging to functional analysis.

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