

<<实分析原理>>

图书基本信息

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前言

This is the third edition of Principles of Real Analysis, first published in 1981. The aim of this edition is to accommodate the current needs for the traditional real analysis course that is usually taken by the senior undergraduate or by the first year graduate student in mathematics. This edition differs substantially from the second edition. Each chapter has been greatly improved by incorporating new material and by rearranging the old material. Moreover, a new chapter (Chapter 6) on Hilbert spaces and Fourier analysis has been added.

The subject matter of the book focuses on measure theory and the Lebesgue integral as well as their applications to several functional analytic directions. As in the previous editions, the presentation of measure theory is built upon the notion of a semiring in connection with the classical Carathéodory extension procedure. We believe that this natural approach can be easily understood by the student. An extra bonus of the presentation of measure theory via the semiring approach is the fact that the product of semirings is always a semiring while the product of σ -algebras is a σ -algebra but not a σ -algebra. This simple but important fact demonstrates that the semiring approach is the natural setting for product measures and iterated integrals. The theory of integration is also studied in connection with partially ordered vector spaces and, in particular, in connection with the theory of vector lattices. The theory of vector lattices provides the natural framework for formalizing and interpreting the basic properties of measures and integrals (such as the Radon-Nikodym theorem, the Lebesgue and Jordan decompositions of a measure, and the Riesz representation theorem). The bibliography at the end of the book includes several books that the reader can consult for further reading and for different approaches to the presentation of measure theory and integration. In order to supplement the learning effort, we have added many problems (more than 150 for a total of 609) of varying degrees of difficulty. Students who solve a good percentage of these problems will certainly master the material of this book. To indicate to the reader that the development of real analysis was a collective effort by many great scientists from several countries and continents through the ages, we have included brief biographies of all contributors to the subject mentioned in this book.

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内容概要

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