Preface

This book contains the second part of a Course of Analysis consisting of three parts: Algebra, Topology, Integration and Differential Calculus.

It is the outgrowth of a course taught at Paris for several years, of which hectographed sections have been released by the University Document Center.

The exposition in the present volume assumes little previous knowledge beyond elementary calculus and the simplest facts about vector spaces.

Our aim is to present, in as simple a setting as possible, some of the powerful tools of modern analysis, and their applications.

The fundamental notions are nearly always presented in general form after a preliminary study of one or two examples intended to justify the choice of definitions. Thus, we introduce arbitrary topological spaces after a brief study of the real line; metric spaces are brought in only later when questions of uniformity arise. Similarly, normed vector spaces and Hilbert spaces appear only after a study of locally convex spaces, whose importance in modern analysis and its applications never ceases to increase.

We have been careful to make precise the domain of validity of theorems by examples and counterexamples. Numerous problems of varying difficulty will allow students to test their understanding of the course and to exercise their creative faculties.

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