<<奇异积分和函数的可微性>>

图书基本信息

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内容概要

本书内容简介：This book is an outgrowth of a course which I gave at Orsay duringthe academic year 1 966.67 MY purpose in those lectures was to pre-sent some of the required background and at the same time clarify theessential unity that exists between several related areas of analysis.These areas are：the existence and boundedness of singular integral op-erators；the boundary behavior of harmonic functions；and differentia-bility properties of functions of several variables.AS such the commoncore of these topics may be said to represent one of the central develop-ments in n.dimensional Fourier analysis during the last twenty years， and it can be expected to have equal influence in the future.These pos.

书籍目录

章节摘录

The basic ideas of the theory of reaI variables are connected with theconcepts of sets and ftmctions, together with the processes of integrationand difirerentiation applied to them.WhiIe the essential aspects of theseideas were brought to light in the early part of our century, some of theirfurther applications were developed only more recently.It iS from thislatter perspective that we shall approach that part of the theory thatinterests US.In doing SO, we distinguish several main features: The theorem of Lebesgue about the differentiation of the integral.The study of properties related to this process iS best done in terms of a " maximal function " to which it gives rise: the basic features of the latterare expressed in terms of a " weak-type " inequality which iS characteristicof this situation. Certain covering lemmas.In general the idea iS to cover an arbitraryopen set in terms of a disioint union ofcubes or balls, chosen in a mannerdepending on the problem at hand.ORe such example iS a lemma ofWhitney, fTheorem 3).Sometimes, however, it SHffices to cover only aportion of the set。
as in the simple covering lemma, which iS used to provethe weak-type inequality mentioned above. f31 Behavior near a ' 'general " point of an arbitrary set.The simplest notion here iS that of point of density.More refined properties are bestexpressed in terms of certain integrals first studied systematically by Marcinkiewicz. (4) The splitting of functions into their large and small parts.Thisfeature which iS more of a technique than an end in itself, recurs often.ItiS especially useful in proving Linequalities, as in the first theorem ofthis chapter.That part of the proof of the first theorem iS systematizedin the Marcinkiewicz interpolation theorem discussed in § 4 of this chapter and also in Appendix B. ......

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