<<基础拓扑和几何讲义>>

图书基本信息

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前言

At the present time， the average undergraduate mathematics major findsmathematics heavily compartmentalized. After the calculus， he takes a coursein analysis and a course in algebra. Depending upon his interests （or those ofhis department）， he takes courses in special topics. If he is exposed to topology， it is usually straightforward point set topology; if he is exposed to geometry， it is usually classical differential geometry. The exciting revelations thatthere is some unity in mathematics， that fields overlap， that techniques of onefield have applications in another， are denied the undergraduate. He mustwait until he is well into graduate work to see interconnections， presumablybecause earlier he doesnt know enough.These notes are an attempt to break up this compartmentalization， at leastin topologygeometry. What the student has learned in algebra and advancedcalculus are used to prove some fairly deep results relating geometry， topology， and group theory. （De Rhams theorem， the GaussBonnet theorem forsurfaces， the functorial relation of fundamental group to covering space， andsurfaces of constant curvature as homogeneous spaces are the most noteworthy examples. ）In the first two chapters the bare essentials of elementary point set topologyare set forth with some hint of the subjects application to functional analysis.Chapters 3 and 4 treat fundamental groups， covering spaces， and simplicialcomplexes. For this approach the authors are indebted to E. Spanier. Aftersome preliminaries in Chapter 5 concerning the theory of manifolds， the DeRham theorem （Chapter 6） is proven as in H. Whitneys Geometric IntegrationTheory. In the two final chapters on Riemannian geometry， the authorsfollow E. Cartan and S. S. Chem. （In order to avoid Lie group theory in thelast two chapters， only oriented 2dimensional manifolds are treated.）

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内容概要

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