<<曲面几何学>>

图书基本信息

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前言

Geometry used to be the basis ofa mathematical education；today it IS not even a standard undergraduate topic.Much as I deplore this situation,1welcome the opportunity to make a fresh start.Classical geometry is nolonger an adequate basis for mathematics or physics-both of which arebe coming increasingly geometric-and geometry Can no longer be divorced from algebra,topology,and analysis.Students need a geometry of greater scope and the factthattherei Sno room for geometryin the curriculumus-til the third or fourth year at least allows 118 to as8ume some mathematical background. What geometry should be taught ?
I believe that the geometry of surfaces of constant curvature is an ideal choice, for the following reasons：1.It is basically simple and traditional.We are not forgetting euclideangeometry but extending it enough to be interesting and useful.Theextensions offer the simplest possible introduction to fundamentals ofmodem geometry ：curvature.group actions,and covering 8paces. 2.The prerequisites are modest and standard.A little linear algebra fmostly 2×2 matrices）, calculus as far as hyperbolic functions,basic group theory（subgroups and cosets）, and basic topology（open,closed, and compact sets）.3.（Most important.）The theory of surfaces of constant curvature has maximal connectivity with the rest of mathematics.Such surfaces model the variants of euclidean geometry obtained by changing the parallel axiom；they are also projective geometries, Riemann surfaces, and complex algebraic curves.They realize all of the topological types of compact two-dimensional manifolds.Historically,they are the 80urce of the main concepts of complex analysis, differential geometry,topology,and combinatorial group theory.（They axe also the sOuroe of some hot research topics of the moment, such as[ractal geometry and string theory.） The only problem with such a deep and broad topic is that it cannot be covered completely by a book of this size.Since.however,this IS the size 0f book I wish to write, I have tried to extend my formal coverage in two wavs：by exercises and by informal discussions.

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内容概要

《曲面几何学》揭示了几何和拓扑之间的相互关系，为广大读者介绍了现代几何的基本概况。
书的开始介绍了三种简单的面，欧几里得面、球面和双曲平面。
运用等距同构群的有效机理，并且将这些原理延伸到常曲率的所有可以用合适的同构方法获得的曲面。
紧接着主要是从拓扑和群论的观点出发，讲述一些欧几里得曲面和球面的分类，较为详细地讨论了一些有双曲曲面。
由于常曲率曲面理论和现代数学有很大的联系，该书是一本理想的学习几何的入门教程，用最简单易行的方法介绍了曲率、群作用和覆盖面。
这些理论融合了许多经典的概念，如，复分析、微分几何、拓扑、组合群论和比较热门的分形几何和弦理论。
《曲面几何学》内容自成体系，在预备知识部分包括一些线性代数、微积分、基本群论和基本拓扑。

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书籍目录

章节摘录

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