

《线性代数导论》

图书基本信息

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内容概要

This book is meant as a short text in linear algebra for a one-term course. Except for an occasional example or exercise the text is logically independent of calculus, and could be taught early. In practice, I expect it to be used mostly for students who have had two or three terms of calculus. The course could also be given simultaneously with, or immediately after, the first course in calculus.

此书为英文版！

《线性代数导论》

作者简介

塞尔日·兰 (Serge Lang, 1927年5月19日 - 2005年9月12日) 是美国数学家, 因他在代数的工作和他编写的多本教科书 (包括影响颇大的Algebra) 而闻名。他的教科书定位于纯数学, 以习题原创闻名。

书籍目录

CHAPTER Vectors

1. Definition of Points in Space
2. Located Vectors
3. Scalar Product
4. The Norm of a Vector
5. Parametric Lines
6. Planes

CHAPTER Matrices and Linear Equations

1. Matrices
2. Multiplication of Matrices
3. Homogeneous Linear Equations and Elimination
4. Row Operations and Gauss Elimination
5. Row Operations and Elementary Matrices
6. Linear Combinations

CHAPTER Vector Spaces

1. Definitions
2. Linear Combinations
3. Convex Sets
4. Linear Independence
5. Dimension
6. The Rank of a Matrix

CHAPTER Linear Mappings

1. Mappings
2. Linear Mappings
3. The Kernel and Image of a Linear Map
4. The Rank and Linear Equations Again
5. The Matrix Associated with a Linear Map

Appendix: Change of Bases

CHAPTER Composition and Inverse Mappings

1. Composition of Linear Maps
2. Inverses

CHAPTER Scalar Products and Orthogonality

1. Scalar Products
2. Orthogonal Bases
3. Bilinear Maps and Matrices

CHAPTER Determinants

1. Determinants of Order 2
2. 3×3 and $n \times n$ Determinants
3. The Rank of a Matrix and Subdeterminants
4. Cramer's Rule
5. Inverse of a Matrix
6. Determinants as Area and Volume

CHAPTER Eigenvectors and Eigenvalues

1. Eigenvectors and Eigenvalues
2. The Characteristic Polynomial
3. Eigenvalues and Eigenvectors of Symmetric Matrices
4. Diagonalization of a Symmetric Linear Map

Appendix Complex Numbers
Answers to Exercises
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《线性代数导论》

精彩短评

- 1、严密的内部逻辑 看过受益匪浅
- 2、线性空间和线性变换更重要，而不是行列式和矩阵

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精彩书评

1、重要的是对许多核心的概念讨论得比较透彻。学习线性代数，最重要的不是去熟练矩阵运算和解方程的方法，这些在实际工作中MATLAB可以代劳，关键的是要深入理解几个基础而又重要的概念：子空间，正交，特征值和特征向量，和线性变换。一本线代教科书的质量，就在于它能否给这些基本概念以足够的重视，能否把它们之间的联系讲清楚。

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