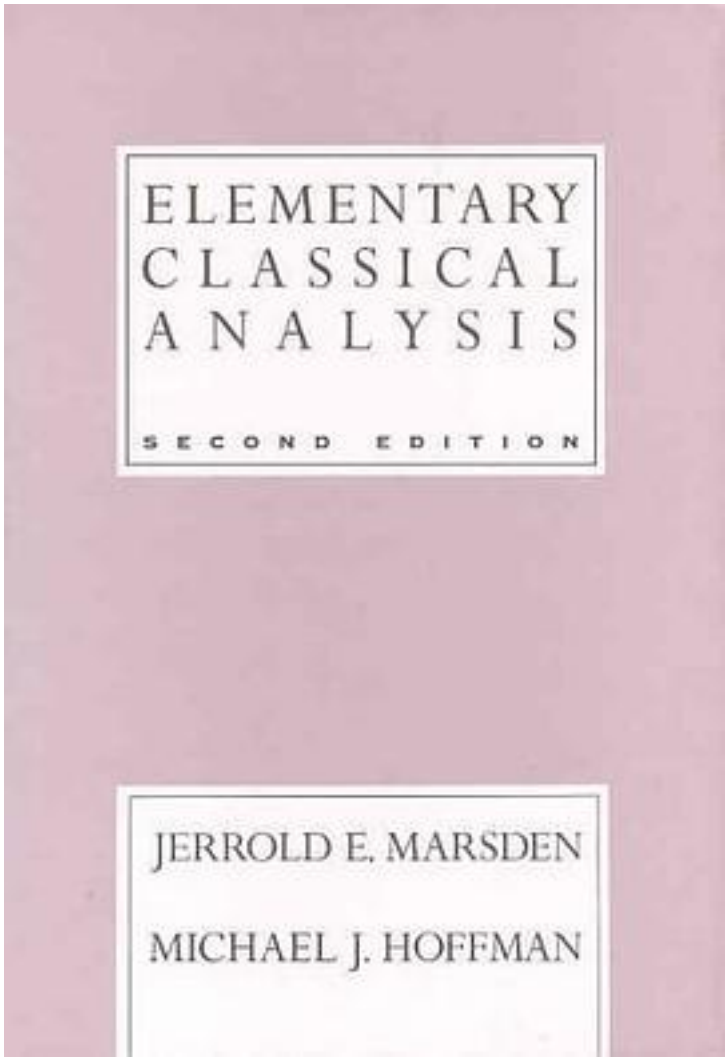
Elementary Classical Analysis



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This second edition preserves the spirit of the first in that it presents elementary classical analysis in a concrete setting emphasizing specific techniques important to classical analysis and its applications. Examples from control theory or from quantum mechanics are introduced when relevant. The text is limited to analysis in the sense of real analysis without vector calculus or complex analysis.

作者介绍:

目录: 1. Introduction: Sets and Functions
Supplement on the Axioms of Set Theory

2. The Real Line and Euclidean Space
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Least Upper Bounds
Cauchy Sequences
Cluster Points: lim inf and lim sup
Euclidean Space
Norms, Inner Products, and Metrics
The Complex Numbers

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Boundary of a Set
Sequences
Completeness
Series of Real Numbers and Vectors

4. Compact and Connected Sets
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The Heine-Borel Theorem
Nested Set Property
Path-Connected Sets
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5. Continuous Mappings
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The Intermediate Value Theorem
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Integration of Functions of One Variable

6. Uniform Convergence
Pointwise and Uniform Convergence
The Weierstrass M Test

Integration and Differentiation of Series
The Elementary Functions
The Space of Continuous Functions
The Arzela-Ascoli Theorem
The Contraction Mapping Principle and Its Applications
The Stone-Weierstrass Theorem
The Dirichlet and Abel Tests
Power Series and Cesaro and Abel Summability

7. Differentiable Mappings
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Matrix Representation
Continuity of Differentiable Mappings; Differentiable Paths
Conditions for Differentiability
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Product Rule and Gradients
The Mean Value Theorem
Taylor's Theorem and Higher Derivatives
Maxima and Minima

8. The Inverse and Implicit Function Theorems and Related Topics
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Implicit Function Theorem
The Domain-Straightening Theorem
Further Consequences of the
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An Existence Theorem for Ordinary Differential Equations
The Morse Lemma
Constrained Extrema and Lagrange Multipliers

9. Integration
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Some Convergence Theorems
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10. Fubini's Theorem and the Change of Variables Formula
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Interchange of Limiting Operations

11. Fourier Analysis
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Computation of Fourier Series

Further Convergence Theorems
Applications
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Miscellaneous Exercises
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Answers to Selected Odd-Numbered Exercises
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标签

textbook

real_analysis

advanced_calculus

math

J.E.Marsden

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applied_math

M.J.Hoffman

评论

校誤:
http://www.cds.caltech.edu/~marsden/books/Elementary_Classical_Analys.html.
這本風格較口語化, 有圖輔助說明. 至少搭配另一本高微/實析會較好.

仅次于loomis，适合物理系看的高等微积分(分析)。

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书评

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