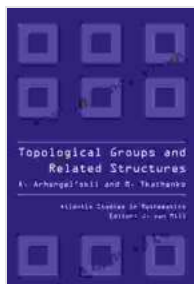


Topological Groups and Related Structures: An Introduction to Topological Algebra (Book Review)



Topological Groups and Related Structures, An Introduction to Topological Algebra. (Atlantis Studies in Mathematics Book 1) by Collins Easy Learning

★★★★★ 5 out of 5

Language : English

File size : 14727 KB

Screen Reader: Supported

Print length : 800 pages

Hardcover : 131 pages

Item Weight : 9.2 ounces

Dimensions : 7 x 0.38 x 10 inches



In the realm of mathematics, topological groups occupy a central and influential position, intricately intertwining the fields of topology and algebra. Topological Groups and Related Structures: An Introduction to Topological Algebra provides a comprehensive and accessible guide to this fascinating subject.

Authored by renowned mathematician A.L.T. Paterson, this extensive textbook is designed to equip readers with a thorough foundation in the study of topological groups and their applications across various branches of mathematics.

Content and Structure

The book is meticulously structured into three parts, each delving into specific aspects of topological groups and related structures:

Part I: Foundations

- General topology and group theory fundamentals
- Topological groups: definitions, examples, and basic properties
- Subgroups, quotient groups, and homomorphisms in topological groups

Part II: Topological Groups

- Compact groups: properties, examples, and applications
- Lie groups: differential manifolds with group structures
- Locally compact groups: an essential class with rich properties

Part III: Related Structures

- Topological vector spaces: vector spaces endowed with a topology
- Topological rings and fields: algebraic structures with topological properties
- Uniform spaces: generalizations of metric spaces with applications in analysis

Applications and Connections

The strength of Topological Groups and Related Structures lies not only in its comprehensive coverage but also in its emphasis on showcasing the practical applications and interconnections of the subject.

Throughout the book, Paterson skillfully demonstrates how topological groups play a vital role in:

- Functional analysis: studying infinite-dimensional vector spaces and operators
- Algebraic topology: exploring the topological properties of algebraic structures
- Differential geometry: investigating smooth manifolds and their geometric properties
- Homological algebra: studying algebraic structures using homology theory

Pedagogical Features

As an introductory textbook, *Topological Groups and Related Structures* incorporates several pedagogical features to enhance readers' learning experience:

- Numerous examples and exercises throughout each chapter
- Detailed proofs and explanations to foster a deep understanding
- Historical notes and references to original sources for further exploration
- An extensive bibliography for additional reading and research

Target Audience

Topological Groups and Related Structures: An Introduction to Topological Algebra is primarily intended for:

- Graduate students in mathematics pursuing a specialization in algebra, topology, or related fields
- Researchers seeking a comprehensive reference on topological groups and their applications
- Educators looking for a suitable textbook for advanced courses in topological algebra

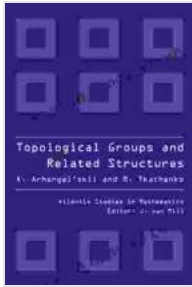
, *Topological Groups and Related Structures: An Introduction to Topological Algebra* is an indispensable resource for anyone seeking a comprehensive and in-depth understanding of topological groups and their wide-ranging applications in mathematics.

Paterson's masterful exposition, combined with the book's rich pedagogical features, makes this textbook an invaluable companion for students, researchers, and educators alike.

Whether you are embarking on a journey into the fascinating world of topological groups or seeking to deepen your knowledge in this area, *Topological Groups and Related Structures: An Introduction to Topological Algebra* is a must-have addition to your mathematical library.

Image credit: Pixabay

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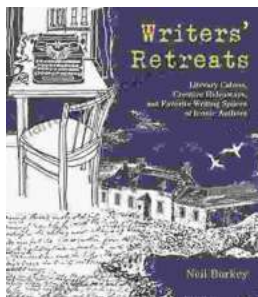
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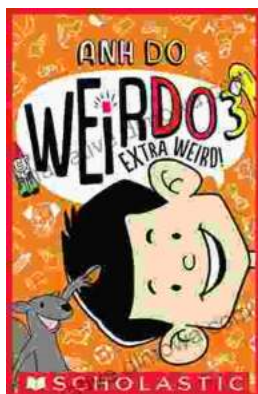
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