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Advanced Mathematics

An Invitation in Preparation for Graduate School

By **Patrick Guidotti**

ABOUT THE BOOK

This exploration of a selection of fundamental topics and general purpose tools provides a roadmap to undergraduate students who yearn for a deeper dive into many of the concepts and ideas they have been encountering in their classes whether their motivation is pure curiosity or preparation for graduate studies. The topics intersect a wide range of areas encompassing both pure and applied mathematics.

The emphasis and style of the book are motivated by the goal of developing self-reliance and independent mathematical thought. Mathematics requires both intuition and common sense as well as rigorous, formal argumentation. This book attempts to showcase both, simultaneously encouraging readers to develop their own insights and understanding and the adoption of proof writing skills. The most satisfying proofs/arguments are fully rigorous and completely intuitive at the same time.

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ABOUT THE AUTHOR

Patrick Guidotti graduated from the Universität Zürich, did postdoctoral research at the Martin-Luther Universität Halle-Wittenberg and at the California Institute of Technology, where he later held the position of Von Karman Instructor. He is currently a professor at UC Irvine.

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TOPICS

Mathematics • General Mathematics

AUDIENCE

Seniors and beginning graduate students transitioning to a graduate program in mathematics

KEYWORDS

Sets and functions; numbers; vectors; topology; differentiation; manifolds; ordinary differential equations; partial differential equations; probability

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