An Introduction To Mathematical Reasoning: Numbers, Sets And Functions
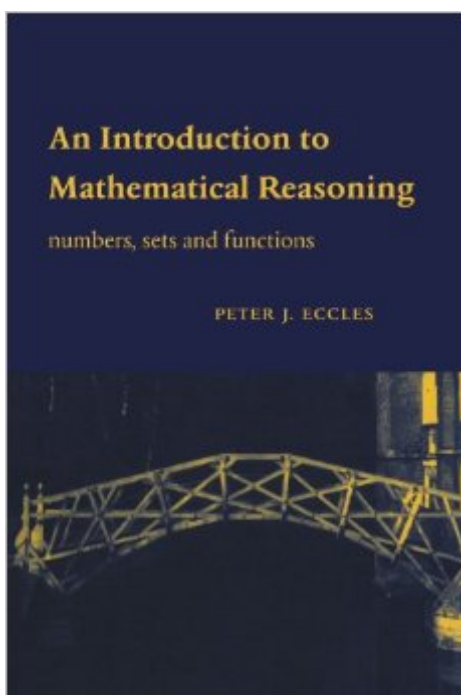

An Introduction to
Mathematical Reasoning

numbers, sets and functions

PETER J. ECCLES

Synopsis

This book eases students into the rigors of university mathematics. The emphasis is on understanding and constructing proofs and writing clear mathematics. The author achieves this by exploring set theory, combinatorics, and number theory, topics that include many fundamental ideas and may not be a part of a young mathematician's toolkit. This material illustrates how familiar ideas can be formulated rigorously, provides examples demonstrating a wide range of basic methods of proof, and includes some of the all-time-great classic proofs. The book presents mathematics as a continually developing subject. Material meeting the needs of readers from a wide range of backgrounds is included. The over 250 problems include questions to interest and challenge the most able student but also plenty of routine exercises to help familiarize the reader with the basic ideas.

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Customer Reviews

I needed a book that covered fundamental background information behind mathematical proof techniques for an undergraduate univeristy level linear algebra class.With this book, I was able to truly learn and understand the major concepts behind mathematical logic and proof. This text brings a whole new meaning to teaching the reader about being precise; and I mean the author does an extremely terrific job of doing just that. Wow!Seriously, the focus here is on content so you won't find any sexy graphs or anything. The content is so good that I often felt that just by reading it I was propelled into a quasi- pseudo-lecture meeting.After following this text, I can say that I now

appreciate the act of being precise to the point that is required for mathematical proof. If you want to extend the knowledge of your 'white board' then just buy this thing. I am so glad I did.BTW, I only needed the content from the first five chapters, I can't say much about the rest of the text. However, taking an inductive approach, I must assume that the other chapters are also very excellent. Yess, see it worked!

I'm at the end of my first discrete mathematics course and have struggled to find clear explainations of how to write a proof, meaning how to choose what method and how to choose what the next statement should be to lead to the desired conclusion. I'm only on chapter five and it is a breath of fresh air to read this. Rather than just showing the completed proof Eccles shows the "scratch" work that goes into making the proof, discusses the reasoning and alternative paths, and then has the final proof that is easily understood.An excellent supplement for a typical college text.

I have a mathematics degree. Like most math majors, I struggled with proofs all through college. This book really has help me understand the art of writing proofs. The book is very well written and easy to read. This is just an awesome book!!!

If you are struggling with a first analysis course or any course that uses proofs, this is the book for you! It introduces basic analysis topics like logic, sets, and the real numbers. And it is written in almost plain english! Moreover, the author focuses on teaching proof writing.

This book is excellent! It chapters are broken down into short sections and the content in each section is to the point! I also bought the book Proofs and Fundamentals by Ethan D. Bloch but found it to be long and drawn out. If you liked The Nuts and Bolts of Proofs by Antonella Cupillari then this book is for you!

This book provides a nice introduction to mathematical reasoning and proofs. My intention on purchasing this book was to learn how to perform mathematical proofs. I believe it has achieved that purpose. The text is easy to follow and the author presents the work clearly.

the binding and the size is just perfect! It's one of the few Mathematics book that i have read while traveling in train (to university and back home)...like a novel if you will.As per the content of the book itself, let me begin by what i liked in this book.First off, this book is pretty good for self-study. I

realize there is a reviewer who claims "For a student who is just learning mathematical proofs, this book is just horrible" but i beg to differ. Prior to this book, i have had only Calc I (limit and derivatives), Calc II (integration), and Calc III (multivariate). Those courses did not have any proofs whatsoever. So, this really was my first attempt to learn proof and boy this book helped!The same reviewer also claims that the examples on the book "are awful and the author shortcuts many proofs"...and here i was about to say the detailed proofs author provides is the another strength of the book. The author of this book understands that students must learn some basic proof techniques such as proof by contradiction and induction. He goes ahead and provides a very well written layout for proofs which a starter might just memorize. Furthermore, in proofs that follow he first shows us how he approached the proof and then only the writes an formal proof.last but not least, all exercises have a complete solution at the end of the book. This is quite helpful especially if you are self-studying. Plus there is a "problem set" which do not have solutions and can be assigned for homework. Be warned though these are relatively harder than the rest. This isn't just me saying, my classmates thought the same...even the professor agreed and often assigned problems of his own.

This is hands down the best introduction to logic and mathematical reasoning in my current library. I highly recommend this to anyone who needs to learn the basics of mathematical proofs because the author takes great care to motivate each concept with plenty of down to earth examples. This book was the only reason I breezed through all my abstract math classes.

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