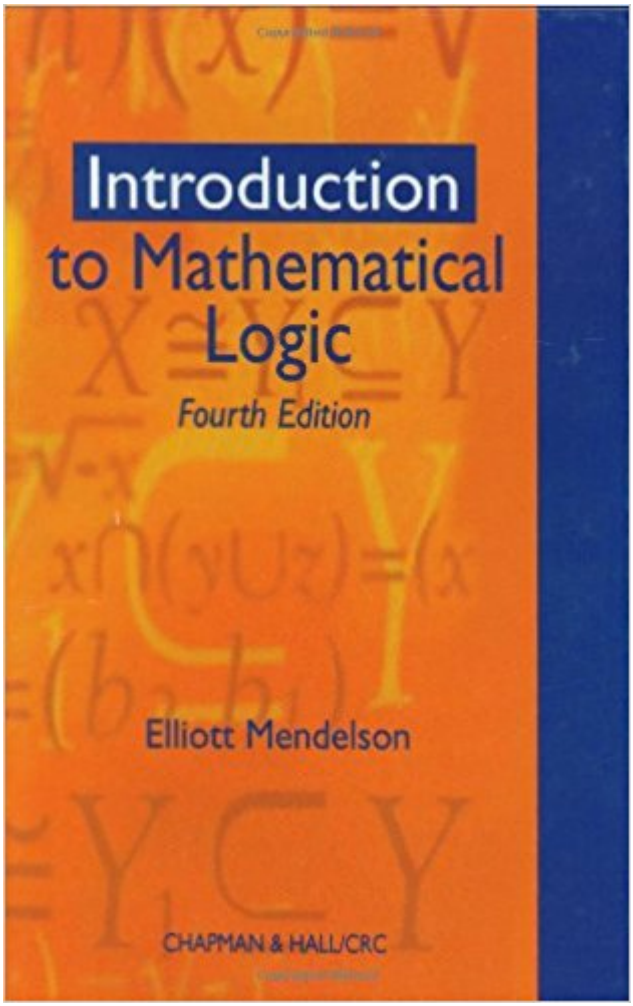
Introduction To Mathematical Logic, Fourth Edition (Discrete Mathematics And Its Applications)



Synopsis

The Fourth Edition of this long-established text retains all the key features of the previous editions, covering the basic topics of a solid first course in mathematical logic. This edition includes an extensive appendix on second-order logic, a section on set theory with urlements, and a section on the logic that results when we allow models with empty domains. The text contains numerous exercises and an appendix furnishes answers to many of them.Introduction to Mathematical Logic includes:propositional logicfirst-order logicfirst-order number theory and the incompleteness and undecidability theorems of GÃƒÂ¶del, Rosser, Church, and Tarskiaxiomatic set theorytheory of computabilityThe study of mathematical logic, axiomatic set theory, and computability theory provides an understanding of the fundamental assumptions and proof techniques that form basis of mathematics. Logic and computability theory have also become indispensable tools in theoretical computer science, including artificial intelligence. Introduction to Mathematical Logic covers these topics in a clear, reader-friendly style that will be valued by anyone working in computer science as well as lecturers and researchers in mathematics, philosophy, and related fields.

Book Information

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Customer Reviews

Nearly forty years after it was published (1964), Elliot Mendelson’s Introduction to Mathematical Logic still remains the best textbook on the principle topics of this subject…I have used Mendelson’s book to teach a one-semester course to advanced undergraduate and graduate

students with great success. - Alan BergerIn my work as a math teacher, researcher, author and journal editor, I often encounter problems with a logical component. When that need arises, my first choice of reference is always this book. It is the most concise and readable introductory text I have ever encountered and it is a rare occasion when I fail to find the background material needed to solve the problem. It is also an excellent source of problems and I have pulled the ideas for many test questions from it over the years.-Charles AshbacherI was sufficiently fortunate to have taken Professor Emeritus Mendelson's famous logic course at Queens College, the City University of New York, just two semesters before his retirement. I was, and continue to be, astonished by Dr. Mendelson's precise yet easy style, and the beautifully efficient organization of the subjects. Everything from the expository prose to the system of notational conventions has been carefully thought through so as to make the book both very substantive and very readable. In my opinion, it's the best introduction to serious mathematical logic currently on the market, and thanks to the genius of its author, it is likely to remain so for a long time. The buyer will not be disappointed.-Joseph Jay Stern

The book is affordable and pretty much identical to both the 5th and 6th editions.

Arrived reasonably promptly. The book's condition is, as described, very good, with only a few spots of discoloration along the edges. Spine is fine, though outside does have a few marks.

A must-have for students interested in classical logic and researchers. A very crisp and mature illustration of the topic. For advanced readers, I'd say. But good also for advanced courses.

Mendelson's Introduction to Mathematical Logic was the textbook for a logic-course I took a couple of years ago. At the time I did not like the book at all. It seemed too difficult and so typographically ugly that I thought I would never use it. Things have changed though. Now, I keep it close at hand on my desk and use it almost every day. Technical questions that used to require a trip to the library and several different books to answer, can usually be resolved by a look in Mendelson's book. It's wonderfully rich and clear! I still don't find everything easy but that's because the material isn't easy and so not something Mendelson can be blamed for. I do find the typography ugly and at times annoying, but that's a small price to pay for a presentation as rigorous and detailed as Mendelson's.So in summary: it's not the ideal book for the complete newcomer, but once you get past the initial hurdle it's a must read.

Nearly forty years after it was published (1964), Elliot Mendelson's Introduction To Mathematical Logic still remains the best textbook on the principal topics of this subject. Although the book does not presuppose any background in the subject or in any particular branch of mathematics, the reader should have some degree of "mathematical sophistication."The first chapter starts with truth tables and ends with a completeness proof of a given formal system for propositional logic and an independence proof of the axioms of this system. Chapter Two is the study of quantification theory. Topics include quantificational completeness, Hilbert's Second Epsilon-Theorem, various topics from model theory, such as compactness and Lowenheim-Skolem Theorems, theorems on submodels and ultrafilters and non-standard analysis. The new fourth edition adds a very nice section on interpretations of quantification theory that allow the empty domain. Chapter Three presents an axiom system for number theory, recursive functions and proves (among other theorems) the famous Godel Incompleteness theorems, Tarski's indefinability of Truth Theorem and Church's Undecidability Theorem. Chapter Four is devoted to elementary set theory. Topics include an axiom system for set theory, ordinal and cardinal numbers, the axiom of choice and regularity, and alternative axiom systems of set theory. The new fourth edition includes an axiom system with urelements, something rarely presented, and an interesting note on the historical application of such a system in the construction of the first independence proof of the axiom of choice. The fifth chapter is the study of computability. The chapter begins with the notion of an algorithm and Turing Machines and builds up to the Kleene-Mostowski Hierarchy. The new fourth edition concludes with an excellent appendix on second-order logic.I have used Mendelson's book to teach a one-semester course to advanced undergraduate and graduate students with great success. Such a course is centered on the first three chapters, omitting from Chapter Two anything beyond quantificational completeness. If time permits, I recommend either the rest of Chapter Two, the beginning of Chapter Five, or the appendix on second-order logic. Set theory, the content of Chapter Three, is usually offered as a separate course.

This is one of the more popular introductory textbooks on mathematical logic, with Enderton's being its biggest competitor. I prefer Mendelson's for its breadth of material and the choice of proofs he uses, which are generally the most intuitive (e.g. Kalmar's for the completeness of the propositional calculus). This is not to say that they are always constructive, as they many of them are in the older texts (e.g. Kleene, Introduction to Metamathemaitcs).The exercises are thoughtfully chosen. There's a good range of difficulty and a good portion of the answers can be found in the back. Difficult

questions are indicated to the reader.Out of all the mathematical logic texts I have (which are quite a few in number), this is the most oft-referred-to.

This book is a bit of an elegy to a dying world: the math logic of the 20th century.It does not cover any nonclassical or philosophical logic, directions heavily researched in recent decades. Algebraic logic is slighted, even though Mendelson was an authority on Boolean algebra. Nor does he do justice to the model theoretic perspective, although the treatment of the Tarski semantics for first order logic in chpt. 2 is a bit of a classic. The treatment of recursion in chpts. 3 and 5 are thorough. The set theory of chpt. 4 is a bit unconventional (NBG rather than ZF) but is well exposited. My overall complaint is the crabbed notation, altho he's come a long way since the first edition. The book also cries out for a more graceful English style and page layout. Here Machover (1996) stands out.Mendelson's bibliography is wonderfully long and rich. Finally, this text contains perhaps the gentlest extant introduction to second order logic.

I was sufficiently fortunate to have taken Professor Emeritus Mendelson's famous logic course at Queens College, the City University of New York, just two semesters before his retirement. I was, and continue to be, astonished by Dr. Mendelson's precise yet easy style, and the beautifully efficient organization of the subjects. Everything from the expository prose to the system of notational conventions has been carefully thought through so as to make the book both very substantive and very readable. In my opinion, it's the best introduction to serious mathematical logic currently on the market, and thanks to the genius of its author, it is likely to remain so for a long time. The buyer will not be disappointed.

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