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Autore	Marker David
Titolo	An Invitation to Mathematical Logic // by David Marker
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Descrizione fisica	1 online resource (359 pages)
Collana	Graduate Texts in Mathematics, , 2197-5612 ; ; 301
Disciplina	511.3
Soggetti	Logic, Symbolic and mathematical Mathematical Logic and Foundations Lògica matemàtica Llibres electrònics
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Nota di contenuto	Introduction -- I. Truth and Proof -- 1 Languages, Structures and Theories -- 2 Embeddings and Substructures -- 3 Formal Proofs -- 4 Gödel's Completeness Theorem -- II. Elements of Model Theory -- 5 Compactness and Complete Theories -- 6 Ultraproducts -- 7 Quantifier Elimination -- 8 Model Theory of the Real Field -- III. Computability -- 9 Models of Computation -- 10 Universal Machines and Undecidability -- 11 Computably Enumerable and Arithmetic Sets -- 12 Turing Reducibility -- IV. Arithmetic and Incompleteness.-13 Gödel's Incompleteness Theorems -- 14 Hilbert's 10th Problem -- 15 Peano Arithmetic and 0 -- 16 Models of Arithmetic and Independence Results. - Appendices -- A Set Theory. - B Unique Readability. - C Real Algebra. -Bibliography. - Index.
Sommario/riassunto	In addition to covering the essentials, the author's intention in writing this text is to entice the reader to further study mathematical logic. There is no current "standard text" for a first graduate course in mathematical logic and this book will fill that gap. While there is more material than could be covered in a traditional one semester course, an instructor can cover the basics and still have the flexibility to choose several weeks' worth of interesting advanced topics that have been introduced. The text can and will be used by people in various courses with different sorts of perspectives. This versatility is one of the many

appealing aspects of this book. A list of suggested portions to be covered in a single course is provided as well as a useful chart which maps chapter dependencies. Additionally, a motivated student will have ample material for further reading. New definitions, formalism, and syntax have been streamlined to engage the reader quickly into the heart of logic and to more sophisticated topics. Part I and Part IV center on foundational questions, while Part III establishes the fundamentals of computability. Part II develops model theory, highlighting the model theory of the fields of real and complex numbers. The interplay between logic and other areas of mathematics, notably algebra, number theory, and combinatorics, are illustrated in Chapters 5, 6, 8, 14, and 16. For most of the text, the only prerequisite is mathematical maturity. The material should be accessible to first year graduate students or advanced undergraduates in mathematics, graduate students in philosophy with a solid math background, or students in computer science who want a mathematical introduction to logic. Prior exposure to logic is helpful but not assumed.
