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Invitation to Discrete Mathematics

Oxford University Press **Invitation to Discrete Mathematics is an introduction and a thoroughly comprehensive text at the same time. A lively and entertaining style with mathematical precision and maturity uniquely combine into an intellectual happening and should delight the interested reader. A master example of teaching contemporary discrete mathematics, and of teaching science in general.**

Invitation to Discrete Mathematics

OUP Oxford **This book is a clear and self-contained introduction to discrete mathematics. Aimed mainly at undergraduate and early graduate students of mathematics and computer science, it is written with the goal of stimulating interest in mathematics and an active, problem-solving approach to the presented material. The reader is led to an understanding of the basic principles and methods of actually doing mathematics (and having fun at that). Being more narrowly focused than many discrete mathematics textbooks and treating selected topics in an unusual depth and from several points of view, the book reflects the conviction of the authors, active and internationally renowned mathematicians, that the most important gain from studying mathematics is the cultivation of clear and logical thinking and habits useful for attacking new problems. More than 400 enclosed exercises with a wide range of difficulty, many of them accompanied by hints for solution, support this approach to teaching. The readers will appreciate the lively and informal style of the text accompanied by more than 200 drawings and diagrams. Specialists in various parts of science with a basic mathematical education wishing to apply discrete mathematics in their field can use the book as a useful source, and even experts in combinatorics may occasionally learn from pointers to research literature or from presentations of recent results. Invitation to Discrete Mathematics should make a delightful reading both for beginners and for mathematical professionals. The main topics include: elementary counting problems, asymptotic estimates, partially ordered sets, basic graph theory and graph algorithms, finite projective planes, elementary probability and the probabilistic method, generating functions, Ramsey's theorem, and combinatorial applications of linear algebra. General mathematical notions going beyond the high-school level are thoroughly explained in the introductory chapter. An appendix summarizes the undergraduate algebra needed in some of the more advanced sections of the book.**

MAT 344

Excerpts from "Invitation to Discrete Mathematics."

Invitation to Dynamical Systems

Courier Corporation **This text is designed for those who wish to study mathematics beyond linear algebra but are unready for abstract material. Rather than a theorem-proof-corollary exposition, it stresses geometry, intuition, and dynamical systems. 1996 edition.**

An Invitation to Combinatorics

Cambridge University Press **A conversational introduction to combinatorics for upper undergraduates, emphasizing problem solving and active student participation.**

An Invitation to Biomathematics

Academic Press **Essential for all biology and biomathematics courses, this textbook provides students with a fresh perspective of quantitative techniques in biology in a field where virtually any advance in the life sciences requires a sophisticated mathematical approach. An Invitation to Biomathematics, expertly written by a team of experienced educators, offers students a solid understanding of solving biological problems with mathematical applications. This text succeeds in enabling students to truly experience advancements made in biology through mathematical models by containing computer-based hands-on laboratory projects with emphasis on model development, model validation, and model refinement. The supplementary work, Laboratory Manual of Biomathematics is available separately ISBN 0123740223, or as a set ISBN: 0123740290) * Provides a complete guide for development of quantification skills crucial for applying mathematical methods to biological problems * Includes well-known examples from across disciplines in the life sciences including modern biomedical research * Explains how to use data sets or dynamical processes to build mathematical models * Offers extensive illustrative materials * Written in clear and easy-to-follow language without assuming a background in math or biology * A laboratory manual is available for hands-on, computer-assisted projects based on material covered in the text**

Discrete Mathematics

An Open Introduction

Note: This is the 3rd edition. If you need the 2nd edition for a course you are taking, it can be found as a "other format" on amazon, or by searching its isbn: 1534970746 This gentle introduction to discrete mathematics is written for first and second year math majors, especially those who intend to teach. The text began as a set of lecture notes for the discrete mathematics course at the University of Northern Colorado. This course serves both as an introduction to topics in discrete math and as the "introduction to proof" course for math majors. The course is usually taught with a large amount of student inquiry, and this text is written to help facilitate this. Four main topics are covered: counting, sequences, logic, and graph theory. Along the way proofs are introduced, including proofs by contradiction, proofs by induction, and combinatorial proofs. The book contains over 470 exercises, including 275 with solutions and over 100 with hints. There are also Investigate! activities throughout the text to support active, inquiry based learning. While there are many fine discrete math textbooks available, this text has the following advantages: It is written to be used in an inquiry rich course. It is written to be used in a course for future math teachers. It is open source, with low cost print editions and free electronic editions. This third edition brings improved exposition, a new section on trees, and a bunch of new and improved exercises. For a complete list of changes, and to view the free electronic version of the text, visit the book's website at discrete.openmathbooks.org

An Invitation to Applied Category Theory

Seven Sketches in Compositionality

Cambridge University Press **Category theory reveals commonalities between structures of all sorts. This book shows its potential in science, engineering, and beyond.**

An Invitation to Abstract Mathematics

Springer Science & Business Media **This undergraduate textbook is intended primarily for a transition course into higher mathematics, although it is written with a broader audience in mind. The heart and soul of this book is problem solving, where each problem is carefully chosen to clarify a concept, demonstrate a technique, or to enthuse. The exercises require relatively extensive arguments, creative approaches, or both, thus providing motivation for the reader. With a unified approach to a diverse collection of topics, this text points out connections, similarities, and differences among subjects whenever possible. This book shows students that mathematics is a vibrant and dynamic human enterprise by including historical perspectives and notes on the giants of mathematics, by mentioning current activity in the mathematical community, and by discussing many famous and less well-known questions that remain open for future mathematicians. Ideally, this text should be used for a two semester course, where the first course has no prerequisites and the second is a more challenging course for math majors; yet, the flexible structure of the book allows it to be used in a variety of settings, including as a source of various independent-study and research projects.**

Discrete Mathematics with Applications

Cengage Learning **Known for its accessible, precise approach, Epp's DISCRETE MATHEMATICS WITH APPLICATIONS, 5th Edition, introduces discrete mathematics with clarity and precision. Coverage emphasizes the major themes of discrete mathematics as well as the reasoning that underlies mathematical thought. Students learn to think abstractly as they study the ideas of logic and proof. While learning about logic circuits and computer addition, algorithm analysis, recursive thinking, computability, automata, cryptography and combinatorics, students discover that ideas of discrete mathematics underlie and are essential to today's science and technology. The author's emphasis on reasoning provides a foundation for computer science and upper-level mathematics courses. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.**

Discrete Mathematics and Its Applications

Alpha Science Int'l Ltd. **Discrete Mathematics and its Applications provides an in-depth review of recent applications in the area and points to the directions of research. It deals with a wide range of topics like Cryptology Graph Theory Fuzzy Topology Computer Science Mathematical Biology A resource for researchers to keep track of the latest developments in these topics. Of interest to graph theorists, computer scientists, cryptographers, security specialists.**

Mathematics: A Discrete Introduction

Cengage Learning **MATHEMATICS: A DISCRETE INTRODUCTION teaches students the fundamental concepts in discrete mathematics and proof-writing skills. With its clear presentation, the text shows students how to present cases logically beyond this course. All of the material is directly applicable to computer science and engineering, but it is presented from a mathematician's perspective. Students will learn that discrete mathematics is very useful, especially those whose interests lie in computer science and engineering, as well as those who plan to study probability, statistics, operations research, and other areas of applied mathematics. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.**

Discrete Mathematics

Springer Science & Business Media **This books gives an introduction to discrete mathematics for beginning undergraduates. One of original features of this book is that it begins with a presentation of the rules of logic as used in mathematics. Many examples of formal and informal proofs are given. With this logical framework firmly in place, the book describes the major axioms of set theory and introduces the natural numbers. The rest of the book is more standard. It deals with functions and relations, directed and undirected graphs, and an introduction to combinatorics. There is a section on public key cryptography and RSA, with complete proofs of Fermat's little theorem and the correctness of the RSA scheme, as well as explicit algorithms to perform modular arithmetic. The last chapter provides more graph theory. Eulerian and Hamiltonian cycles are discussed. Then, we study flows and tensions and state and prove the max flow min-cut theorem. We also discuss matchings, covering, bipartite graphs.**

A Short Course in Discrete Mathematics

Courier Corporation **What sort of mathematics do I need for computer science? In response to this frequently asked question, a pair of professors at the University of California at San Diego created this text. Its sources are two of the university's most basic courses: Discrete Mathematics, and Mathematics for Algorithm and System Analysis. Intended for use by sophomores in the first of a two-quarter sequence, the text assumes some familiarity with calculus. Topics include Boolean functions and computer arithmetic; logic; number theory and cryptography; sets and functions; equivalence and order; and induction, sequences, and series. Multiple choice questions for review appear throughout the text. Original 2005 edition. Notation Index. Subject Index.**

Discrete Mathematics

Elementary and Beyond

Springer Science & Business Media **Aimed at undergraduate mathematics and computer science students, this book is an excellent introduction to a lot of problems of discrete mathematics. It discusses a number of selected results and methods, mostly from areas of combinatorics and graph theory, and it uses proofs and problem solving to help students understand the solutions to problems. Numerous examples, figures, and exercises are spread throughout the book.**

Discrete Mathematics Using a Computer

Springer Science & Business Media **Several areas of mathematics find application throughout computer science, and all students of computer science need a practical working understanding of them. These core subjects are centred on logic, sets, recursion, induction, relations and functions. The material is often called discrete mathematics, to distinguish it from the traditional topics of continuous mathematics such as integration and differential equations. The central theme of this book is the connection between computing and discrete mathematics. This connection is useful in both directions: • Mathematics is used in many branches of computer science, in applica tions including program specification, datastructures,design and analysis of algorithms, database systems, hardware design, reasoning about the correctness of implementations, and much more; • Computers can help to make the mathematics easier to learn and use, by making mathematical terms executable, making abstract concepts more concrete, and through the use of software tools such as proof checkers. These connections are emphasised throughout the book. Software tools (see Appendix A) enable the computer to serve as a calculator, but instead of just doing arithmetic and trigonometric functions, it will be used to calculate with sets, relations, functions, predicates and inferences. There are also special software tools, for example a proof checker for logical proofs using natural deduction.**

An Invitation to Pursuit-Evasion Games and Graph Theory

American Mathematical Society **Graphs measure interactions between objects such as friendship links on Twitter, transactions between Bitcoin users, and the flow of energy in a food chain. While graphs statically represent interacting systems, they may also be used to model dynamic interactions. For example, imagine an invisible evader loose on a graph, leaving only behind breadcrumb clues to their whereabouts. You set out with pursuers of your own, seeking out the evader's location. Would you be able to detect their location? If so, then how many resources are needed for detection, and how fast can that happen? These basic-seeming questions point towards the broad conceptual framework of pursuit-evasion games played on graphs. Central to pursuit-evasion games on graphs is the idea of optimizing certain parameters, whether they are the cop number, burning number, or localization number, for example. This book would be excellent for a second course in graph theory at the undergraduate or graduate level. It surveys different areas in graph searching and highlights many fascinating topics intersecting classical graph theory, geometry, and combinatorial designs. Each chapter ends with approximately twenty exercises and five larger scale projects.**

An Invitation to the Rogers-Ramanujan Identities

CRC Press **The Rogers--Ramanujan identities are a pair of infinite series—infinite product identities that were first discovered in 1894. Over the past several decades these identities, and identities of similar type, have found applications in number theory, combinatorics, Lie algebra and vertex operator algebra theory, physics (especially statistical mechanics), and computer science (especially algorithmic proof theory). Presented in a coherant and clear way, this will be the first book entirely devoted to the Rogers—Ramanujan identities and will include related historical material that is unavailable elsewhere.**

The Discrete Mathematical Charms of Paul Erdős

A Simple Introduction

Cambridge University Press **Paul Erdős published more papers during his lifetime than any other mathematician, especially in discrete mathematics. He had a nose for beautiful, simply-stated problems with solutions that have far-reaching consequences across mathematics. This captivating book, written for students, provides an easy-to-understand introduction to discrete mathematics by presenting questions that intrigued Erdős, along with his brilliant ways of working toward their answers. It includes young Erdős's proof of Bertrand's postulate, the Erdős-Szekeres Happy End Theorem, De Bruijn-Erdős theorem, Erdős-Rado delta-systems, Erdős-Ko-Rado theorem, Erdős-Stone theorem, the Erdős-Rényi-Sós Friendship Theorem, Erdős-Rényi random graphs, the Chvátal-Erdős theorem on Hamilton cycles, and other results of Erdős, as well as results related to his work, such as Ramsey's theorem or Deza's theorem on weak delta-systems. Its appendix covers topics normally missing from introductory courses. Filled with personal anecdotes about Erdős, this book offers a behind-the-scenes look at interactions with the legendary collaborator.**

Introductory Discrete Mathematics

<u>Courier Corporation</u> **This concise, undergraduate-level text focuses on combinatorics, graph theory with applications to some standard network optimization problems, and algorithms. More than 200 exercises, many with complete solutions. 1991 edition.**

Discrete Mathematics with Ducks

<u>CRC Press</u> **Discrete Mathematics with Ducks, Second Edition is a gentle introduction for students who find the proofs and abstractions of mathematics challenging. At the same time, it provides stimulating material that instructors can use for more advanced students. The first edition was widely well received, with its whimsical writing style and numerous exercises and materials that engaged students at all levels. The new, expanded edition continues to facilitate effective and active learning. It is designed to help students learn about discrete mathematics through problem-based activities. These are created to inspire students to understand mathematics by actively practicing and doing, which helps students better retain what they've learned. As such, each chapter contains a mixture of discovery-based activities, projects, expository text, in-class exercises, and homework problems. The author's lively and friendly writing style is appealing to both instructors and students alike and encourages readers to learn. The book's light-hearted approach to the subject is a guiding principle and helps students learn mathematical abstraction. Features: The book's Try This! sections encourage students to construct components of discussed concepts, theorems, and proofs Provided sets of discovery problems and illustrative examples reinforce learning Bonus sections can be used by instructors as part of their regular curriculum, for projects, or for further study**

Invitation to the Game

<u>Simon and Schuster</u> **Unemployed after high school in the highly robotic society of 2154, Lisse and seven friends resign themselves to a boring existence in their "Designated Area" until the government invites them to play The Game.**

Invitation to Didactique

<u>Springer Science & Business Media</u> **This is an introduction to a Didactique, research program that has been going on in France since the '70s and whose importance is now widely recognized, but whose content is still not easy access to anglophones. The work of Dr. Guy Brousseau has remained largely, in his native France, untranslated and largely unknown. This book will unlock the secrets of Didactique and provide an opportunity for researchers, teacher educators, and students to learn of this important methodology. The field of Didactique is rich, deep and extensive. To a large extent, it owes its shape and even its existence to the energy and inspiration poured in by Guy Brousseau starting in the 1960's. Many others have since added their ideas and energies to produce a unique, vibrant, multi-faceted research program. Invitation to Didactique provides an easily accessible general introduction to the field, hitting the high spots and focusing largely on the contributions of Brousseau himself. Teaching Fractions through Situations: a Fundamental Experiment takes one fundamental aspect and examines it in a great deal more depth from several perspectives. It gives a detailed description of a particularly interesting way of teaching fractions and decimals which should be interesting to any reader who enjoys seeing children learn mathematics. It then examines two other aspects of the lesson sequence, first describing the exciting and challenging role of the teachers handling a highly unfamiliar approach and then placing the whole experience in its context in the very earliest phases of the development of this very important field of research.**

Foundations of Discrete Mathematics with Algorithms and Programming

<u>CRC Press</u> **Discrete Mathematics has permeated the whole of mathematics so much so it has now come to be taught even at the high school level. This book presents the basics of Discrete Mathematics and its applications to day-to-day problems in several areas. This book is intended for undergraduate students of Computer Science, Mathematics and Engineering. A number of examples have been given to enhance the understanding of concepts. The programming languages used are Pascal and C.**

The Essence of Discrete Mathematics

Presents a gentle introduction to all the basics of discrete mathematics.Introduces sets and logic, providing clear instructions on calculating values for mathematical expressions for small finite sets. For simplicity, uses sets of numbers extensively -- but also covers non-numerical examples. Introduces relations and functions, and then discusses how they can be modeled using sets. Shows how modeling with sets and logic can be applied to practical problems. Includes a running case study, worked examples and self-test questions.Undergraduate courses in discrete mathematics.

Discrete Random Variables (IB Math)

<u>AcesMath!</u> **Confused about the various concepts on Discrete Random Variables taught in school? This book on Discrete Random Variables seeks to offer a condensed version of what you need to know for your journey in IB Mathematics (HL), alongside with detailed worked examples and extra practice questions. Tips on certain question types are provided to aid in smoothing the working process when dealing with them.**

An Invitation to Model Theory

<u>Cambridge University Press</u> **Model theory begins with an audacious idea: to consider statements about mathematical structures as mathematical objects of study in their own right. While inherently important as a tool of mathematical logic, it also enjoys connections to and applications in diverse branches of mathematics, including algebra, number theory and analysis. Despite this, traditional introductions to model theory assume a graduate-level background of the reader. In this innovative textbook, Jonathan Kirby brings model theory to an undergraduate audience. The highlights of basic model theory are illustrated through examples from specific structures familiar from undergraduate mathematics, paying particular attention to definable sets throughout. With numerous exercises of varying difficulty, this is an accessible introduction to model theory and its place in mathematics.**

Logic and Discrete Mathematics

A Concise Introduction, Solutions Manual

<u>John Wiley & Sons</u> **Solutions manual to accompany Logic and Discrete Mathematics: A Concise Introduction This book features a unique combination of comprehensive coverage of logic with a solid exposition of the most important fields of discrete mathematics, presenting material that has been tested and refined by the authors in university courses taught over more than a decade. Written in a clear and reader-friendly style, each section ends with an extensive set of exercises, most of them provided with complete solutions which are available in this accompanying solutions manual.**

Mathematics for Social Justice: Resources for the College Classroom

<u>American Mathematical Soc.</u> **Mathematics for Social Justice offers a collection of resources for mathematics faculty interested in incorporating questions of social justice into their classrooms. The book begins with a series of essays from instructors experienced in integrating social justice themes into their pedagogy; these essays contain political and pedagogical motivations as well as nuts-and-bolts teaching advice. The heart of the book is a collection of fourteen classroom-tested modules featuring ready-to-use activities and investigations for the college mathematics classroom. The mathematical tools and techniques used are relevant to a wide variety of courses including college algebra, math for the liberal arts, calculus, differential equations, discrete mathematics, geometry, financial mathematics, and combinatorics. The social justice themes include human trafficking, income inequality, environmental justice, gerrymandering, voting methods, and access to education. The volume editors are leaders of the national movement to include social justice material into mathematics teaching. Gizem Karaali is Associate Professor of Mathematics at Pomona College. She is one of the founding editors of The Journal of Humanistic Mathematics, and an associate editor for The Mathematical Intelligencer and Numeracy ; she also serves on the editorial board of the MAA's Carus Mathematical Monographs. Lily Khadjavi is Associate Professor of Mathematics at Loyola Marymount University and is a past co-chair of the Infinite Possibilities Conference. She has served on the boards of Building Diversity in Science, the Barbara Jordan-Bayard Rustin Coalition, and the Harvard Gender and Sexuality Caucus.**

Discrete Mathematics in the Schools

<u>American Mathematical Soc.</u> **This volume is a collection of articles written by experienced primary, secondary, and collegiate educators. The book explains why discrete mathematics should be taught in K-12 classrooms and offers practical guidance on how to do so. In this book, teachers at all levels will find a great deal of valuable material to help them introduce discrete mathematics in their classrooms. One main article provides a comprehensive and detailed view of discrete mathematics for K-12. Another surveys the resources that are available for teachers. School and district curriculum leaders will find material that addresses how discrete mathematics can be introduced into their curricula. College faculty members will find ideas and topics that can be incorporated into a variety of courses.It features: classroom activities and an annotated list of resources; authors who are directors of innovative programs and who are well known for their work; a description of discrete mathematics providing the opportunity for a fresh start for students who have**

been previously unsuccessful in mathematics; discussion on discrete mathematics as it is used to achieve the goals of the current effort to improve mathematics education; guidance on topics, resources and teaching; and a valuable guide for both pre-service and in-service professional development.

Applications of Discrete Mathematics

SIAM

Discrete Mathematics

Mathematical Reasoning and Proof with Puzzles, Patterns, and Games

John Wiley & Sons **Did you know that games and puzzles have given birth to many of today's deepest mathematical subjects? Now, with Douglas Ensley and Winston Crawley's Introduction to Discrete Mathematics, you can explore mathematical writing, abstract structures, counting, discrete probability, and graph theory, through games, puzzles, patterns, magic tricks, and real-world problems. You will discover how new mathematical topics can be applied to everyday situations, learn how to work with proofs, and develop your problem-solving skills along the way. Online applications help improve your mathematical reasoning. Highly intriguing, interactive Flash-based applications illustrate key mathematical concepts and help you develop your ability to reason mathematically, solve problems, and work with proofs. Explore More icons in the text direct you to online activities at www.wiley.com/college/ensley. Improve your grade with the Student Solutions Manual. A supplementary Student Solutions Manual contains more detailed solutions to selected exercises in the text.**

An Invitation to Analytic Combinatorics

From One to Several Variables

Springer **This book uses new mathematical tools to examine broad computability and complexity questions in enumerative combinatorics, with applications to other areas of mathematics, theoretical computer science, and physics. A focus on effective algorithms leads to the development of computer algebra software of use to researchers in these domains. After a survey of current results and open problems on decidability in enumerative combinatorics, the text shows how the cutting edge of this research is the new domain of Analytic Combinatorics in Several Variables (ACSV). The remaining chapters of the text alternate between a pedagogical development of the theory, applications (including the resolution by this author of conjectures in lattice path enumeration which resisted several other approaches), and the development of algorithms. The final chapters in the text show, through examples and general theory, how results from stratified Morse theory can help refine some of these computability questions. Complementing the written presentation are over 50 worksheets for the SageMath and Maple computer algebra systems working through examples in the text.**

A = B

CRC Press **This book is of interest to mathematicians and computer scientists working in finite mathematics and combinatorics. It presents a breakthrough method for analyzing complex summations. Beautifully written, the book contains practical applications as well as conceptual developments that will have applications in other areas of mathematics. From the table of contents: * Proof Machines * Tightening the Target * The Hypergeometric Database * The Five Basic Algorithms: Sister Celine's Method, Gosper&'s Algorithm, Zeilberger's Algorithm, The WZ Phenomenon, Algorithm Hyper * Epilogue: An Operator Algebra Viewpoint * The WWW Sites and the Software (Maple and Mathematica) Each chapter contains an introduction to the subject and ends with a set of exercises.**

An Invitation to Mathematical Physics and Its History

Springer Nature **This state of the art book takes an applications based approach to teaching mathematics to engineering and applied sciences students. The book lays emphasis on associating mathematical concepts with their physical counterparts, training students of engineering in mathematics to help them learn how things work. The book covers the concepts of number systems, algebra equations and calculus through discussions on mathematics and physics, discussing their intertwined history in a chronological order. The book includes examples, homework problems, and exercises. This book can be used to teach a first course in engineering mathematics or as a refresher on basic mathematical physics. Besides serving as core textbook, this book will also appeal to undergraduate students with cross-disciplinary interests as a supplementary text or reader.**

Discrete Mathematics with Applications

Elsevier **This approachable text studies discrete objects and the relationsips that bind them. It helps students understand and apply the power of discrete math to digital computer systems and other modern applications. It provides excellent preparation for courses in linear algebra, number theory, and modern/abstract algebra and for computer science courses in data structures, algorithms, programming languages, compilers, databases, and computation. * Covers all recommended topics in a self-contained, comprehensive, and understandable format for students and new professionals * Emphasizes problem-solving techniques, pattern recognition, conjecturing, induction, applications of varying nature, proof techniques, algorithm development and correctness, and numeric computations * Weaves numerous applications into the text * Helps students learn by doing with a wealth of examples and exercises: - 560 examples worked out in detail - More than 3,700 exercises - More than 150 computer assignments - More than 600 writing projects * Includes chapter summaries of important vocabulary, formulas, and properties, plus the chapter review exercises * Features interesting anecdotes and biographies of 60 mathematicians and computer scientists * Instructor's Manual available for adopters * Student Solutions Manual available separately for purchase (ISBN: 0124211828)**

Discrete Mathematical Structures

New Age International **About the Book: This text can be used by the students of mathematics and computer science as an introduction to the fundamentals of discrete mathematics. The book is designed in accordance with the syllabi of B.E., B. Tech., MCA and M.Sc. (Computer Science) prescribed in most of the universities of India. Each chapter is supplemented with a number of worked example as well as a number of problems to be solved by the students. This would help in a better understanding of the subject. Contents: Mathematical Logic Set Theory Relations Functions and Recurrence Relations Boolean Algebra Logic Gates Elementary Combinatorics Graph Theory Algebraic Structures Finite State Machines**

Invitations to Geometry and Topology

Oxford University Press on Demand **This volume presents an array of topics that introduce the reader to key ideas in active areas in geometry and topology. The material is presented in a way that both graduate students and researchers should find accessible and enticing. The topics covered range from Morse theory and complex geometry theory to geometric group theory, and are accompanied by exercises that are designed to deepen the reader's understanding and to guide them in exciting directions for future investigation.**

An Invitation to Quantum Field Theory

Springer Science & Business Media **This book provides an introduction to Quantum Field Theory (QFT) at an elementary level—with only special relativity, electromagnetism and quantum mechanics as prerequisites. For this fresh approach to teaching QFT, based on numerous lectures and courses given by the authors, a representative sample of topics has been selected containing some of the more innovative, challenging or subtle concepts. They are presented with a minimum of technical details, the discussion of the main ideas being more important than the presentation of the typically very technical mathematical details necessary to obtain the final results. Special attention is given to the realization of symmetries in particle physics: global and local symmetries, explicit, spontaneously broken, and anomalous continuous symmetries, as well as discrete symmetries. Beyond providing an overview of the standard model of the strong, weak and electromagnetic interactions and the current understanding of the origin of mass, the text enumerates the general features of renormalization theory as well as providing a cursory description of effective field theories and the problem of naturalness in physics. Among the more advanced topics the reader will find are an outline of the first principles derivation of the CPT theorem and the spin-statistics connection. As indicated by the title, the main aim of this text is to motivate the reader to study QFT by providing a self-contained and approachable introduction to the most exciting and challenging aspects of this successful theoretical framework.**

An Invitation To Noncommutative Geometry

World Scientific **This is the first existing volume that collects lectures on this important and fast developing subject in mathematics. The lectures are given by leading experts in the field and the range of topics is kept as broad as possible by including both the algebraic and the differential aspects of noncommutative geometry as well as recent applications to theoretical physics and number theory.**