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Over 300 challenging problems in algebra, arithmetic, elementary number theory and trigonometry, selected from Mathematical

Olympiads held at Moscow University. Only high school math needed. Includes complete solutions. Features 27 black-and-white illustrations. 1962 edition. Well-conceived text with many special features covering functions and graphs, straight lines and conic sections, new coordinate systems, the derivative, much more. Many examples, exercises, practical problems, with answers. Advanced undergraduate/graduate-level. 2nd edition. DATA CONSCIENCE ALGORITHMIC SIEGE ON OUR HUMANITY EXPLORE HOW DATA STRUCTURES CAN HELP OR HINDER SOCIAL EQUITY Data has enjoyed 'bystander' status as we've attempted to digitize responsibility and morality in tech. In fact, data's importance should earn it a spot at the center of our thinking and strategy around building a better, more ethical world. Its use and misuse—lies at the heart of many of the racist, gendered, classist, and otherwise oppressive practices of modern tech. In Data Conscience: Algorithmic Siege on our Humanity, computer science and data inclusivity thought leader Dr. Brandeis Hill Marshall delivers a call to action for rebel tech leaders, who acknowledge and are prepared to address the current limitations of software development. In the book, Dr. Brandeis Hill Marshall discusses how the philosophy of "move fast and break things" is, itself, broken, and requires change. You'll learn about the ways that discrimination rears its ugly head in the digital space and how to address them with several known algorithms, including social network analysis, and linear regression. A can't-miss resource for junior-level to senior-level software developers who have gotten their hands dirty with at least a handful of significant software development projects, Data Conscience also provides readers with:

- Discussions of the importance of transparency
- Explorations of computational thinking in practice
- Strategies for encouraging accountability in tech
- Ways to avoid double-edged data visualizations
- Schemes for governing data structures with law and algorithms

A contained text for an introductory course, this volume places strong emphasis on physical applications. Key elements of differential

equations and linear algebra are introduced early and are consistently referenced, all theorems are proved using elementary methods, and numerous worked-out examples appear throughout. The highly readable text approaches calculus from the student's viewpoint and points out potential stumbling blocks before they develop. A collection of more than 1,600 problems ranges from exercise material to exploration of new points of theory — many of the answers are found at the end of the book; some of them worked out fully so that the entire process can be followed. This well-organized, unified text is copiously illustrated, amply cross-referenced, and fully indexed. This book stresses the differential geometry of surfaces and its relevance to engineering and the sciences. For many students, calculus can be the most mystifying and frustrating course they will ever take. Based upon Adrian Banner's popular calculus review course at Princeton University, this book provides students with the essential tools that not only to learn calculus, but also to excel at it. This new edition of *An Invitation to Computer Science* follows the breadth-first guidelines recommended by CC2001 to teach computer science topics from the ground up. The authors begin by showing that computer science is the study of algorithms, the central theme of the book, then move up through the next five levels of the hierarchy: hardware, virtual machine, software applications, and ethics. Utilizing rich pedagogy and a consistently engaging writing style, Schneider and Gersting provide students with solid grounding in theoretical concepts, as well as important applications of computing and information technology. A laboratory manual and accompanying software is available as an optional bundle with this text. Written for today's technology student, **TECHNICAL CALCULUS WITH ANALYTIC GEOMETRY** prepares you for your future courses! With an emphasis on applications, this mathematical text helps you learn calculus skills that are particular to technology. Clear presentation of concepts, detailed examples, marginal annotations, and step-by-step procedures enhance your understanding.

of difficult concepts. Notations that are frequently encountered in technology are used throughout to help you prepare for further work in your career. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. This textbook for a one-semester introductory course in computer science for non-majors broadly covers algorithms, hardware, operating systems, software, compilers, applications, networks, artificial intelligence, and social and legal issues. Methods of reasoning; Some algebraic structures; Substructures; Building new structures; Morphism; An introduction to the fundamental homomorphism theorems; The fundamental homomorphism revisited; Pulling a few things together. Susanna Epp's DISCRETE MATHEMATICS: AN INTRODUCTION TO MATHEMATICAL REASONING, provides the same clear introduction to discrete mathematics and mathematical reasoning as her highly acclaimed DISCRETE MATHEMATICS WITH APPLICATIONS, but in a compact form that focuses on core topics and omits certain applications usually taught in other courses. The book is appropriate for use in a discrete mathematics course that emphasizes essential topics or in a mathematics major or minor course that serves as a transition to abstract mathematical thinking. The concepts of discrete mathematics underlie and are essential to the science and technology of the computer age. This book offers a synergistic unification of the major themes of discrete mathematics together with the reasoning that underlies mathematical thought. Renowned for her lucid, accessible prose, Epp explains complex, abstract concepts with clarity and precision, helping students develop the ability to think abstractly as they study each topic. In doing so, the book provides students with a strong foundation both for computer science and for other 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. Includes authors, titles, subjects. This text helps students improve their understanding and problem-solving skills in

analysis, analytic geometry, and higher algebra. Over 1,200 problems with hints and complete solutions. Topics include sequences, functions of a single variable, limit of a function, differential calculus for functions of a single variable, the differential, indefinite and definite integrals, more. 1963 edition. This book's discussion of a broad class of differential equations will appeal to professionals as well as graduate students. Beginning with the structure of the solution space and stability and periodic properties of linear ordinary and Volterra differential equations, the text proceeds to an extensive collection of applied problems. The background for and application to differential equations of the fixed-point theorems of Banach, Brouwer, Browder, Horn, Schauder, and Tychonov are examined, in addition to those of the asymptotic fixed-point theorems. The text concludes with a unique presentation of the basic stability and periodicity theory for nonlinear ordinary and functional differential equations. Computer Science Textbook new edition provides a comprehensive, colorful, up-to-date, and accessible presentation of AI without sacrificing theoretical foundations. It includes numerous examples, applications, full color images, and human interest boxes to enhance student interest. New chapters on robotics and machine learning are now included. Advanced topics cover neural nets, genetic algorithms, natural language processing, planning, and complex board games. A companion DVD is provided with resources, applications, and figures from the book. Numerous instructors' resources are available upon adoption. eBook Customers: Companion files are available for downloading with order number/proof of purchase by writing to the publisher at info@merclearning.com. FEATURES: • Includes new chapters on robotics and machine learning and new sections on speech understanding and metaphor in NLP • Provides a comprehensive, colorful, up to date, and accessible presentation of AI without sacrificing theoretical foundations • Uses numerous examples, applications, full color images, and human interest boxes to enhance

student interest • Introduces important AI concepts e.g., robotics, video games, neural nets, machine learning, and more thorough practical applications • Features over 300 figures and color images with worked problems detailing AI methods and solutions to selected exercises • Includes DVD with resources, simulations, and figures from the book • Provides numerous instructors' resources, including: solutions to exercises, Microsoft PP slides, etc. In a comprehensive easy-to-follow manner, *Discrete Mathematics for New Technology* follows the progression from the basic mathematical concepts covered by the GCSE in the UK and by high-school algebra in the USA to the more sophisticated mathematical concepts examined in the latter part of the book. The book punctuates the rigorous treatment of theory with frequent uses of pertinent examples and exercises, enabling readers to achieve a feel for the subject at hand. The exercise hints and solutions are provided at the end of the book. Topics covered include logic and the nature of mathematical proof, set theory, relations and functions, matrices and systems of linear equations, algebraic structures, Boolean algebras, and a thorough treatise on graph theory. Although aimed primarily at computer science students, the structured development of the mathematics enables this text to be used by undergraduate mathematicians, scientists, and others who require an understanding of discrete mathematics. This volume documents on-going research and theorising in the sub-field of mathematics education devoted to the teaching and learning of mathematical modelling and applications. Mathematical modelling provides a way of conceiving and resolving problems in the life world of people whether these range from the everyday individual numeracy level to sophisticated new problems of society at large. Mathematical modelling and real world applications are considered as having potential for multi-disciplinary work that involves knowledge from a variety of communities of practice such as those in different workplaces (e.g., those of educators, designers, construction engineers, museum curators) and in different fields of

academic endeavour (e.g., history, archaeology, mathematics, economics). From an educational perspective, researching the development of competency in real world modelling involves research situated in crossing the boundaries between being a student engaged in modelling or mathematical application to real world tasks in the classroom, being a teacher of mathematical modelling (in or outside the classroom or bridging both), and being a modeller of the world outside the classroom. This is the focus of many of the authors of the chapters in this book. All authors of this volume are members of the International Community of Teachers of Mathematical Modelling (ICTMA), the peak research body into researching the teaching and learning of mathematical modelling at all levels of education from early years to tertiary education as well as in the workplace. This edition offers a pedagogically rich and intuitive introduction to discrete mathematics structures. It meets the needs of computer science students by being both comprehensive and accessible. Updated and revised, *Essentials of Computer Organization and Architecture, Third Edition* is a comprehensive resource that addresses all of the necessary organization and architecture topics, yet is appropriate for the one-semester course. This is a book on the basics of mathematics and computation and their uses in economics for modern day students and practitioners. The reader is introduced to the basics of numerical analysis as well as the use of computer programs such as Matlab and Excel in carrying out involved computations. Sections are devoted to the use of Maple for mathematical analysis. Examples drawn from recent contributions to economic theory and econometrics as well as a variety of end of chapter exercises help to illustrate and apply the presented concepts. * Explains the physical meaning of linear and nonlinear structural mechanics. * Shows how to perform nonlinear structural analysis. * Points out important nonlinear structural dynamics behaviors. * Provides ready-to-use governing equations. Discover a contemporary overview of today's computer science with Schneider/Gersting's best-selling INVITATION

TO COMPUTER SCIENCE, 8E. This flexible, non-language-specific approach provides a solid foundation in computer science using an algorithm-centered approach that's ideal for the reader's first introduction to the field. Measurable learning objectives and an easy-to-follow hierarchy guide readers through algorithms, hardware, virtual machines, software development, applications of computing, and societal issues. Readers connect the dots as the book emphasizes real-life context throughout each chapter. Updates introduce the latest developments concerning privacy, drones, cloud computing, and network neutrality. Visual and hands-on activities let readers experience the fundamentals of today's computer science. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. Now you can clearly present even the most complex computational theory topics to your students with Sipser's distinct, market-leading INTRODUCTION TO THE THEORY OF COMPUTATION, 3E. The number one choice for today's computational theory course, this highly anticipated revision retains the unmatched clarity and thorough coverage that make it the leading text for upper-level undergraduate and introductory graduate students. This edition continues author Michael Sipser's well-known, approachable style with timely revisions, additional exercises, and memorable examples in key areas. A new first-of-its-kind theoretical treatment of deterministic context-free languages is ideal for a better understanding of parsing and LR(k) grammars. This edition's refined presentation ensures a trusted accuracy and clarity that make the challenging study of computational theory accessible and intuitive for students while maintaining the subject's rigor and formalism. Readers gain a solid understanding of the fundamental mathematical properties of computer hardware, software, and applications with a blend of practical and philosophical coverage and mathematical treatments, including advanced theorems and proofs. INTRODUCTION TO THE THEORY OF COMPUTATION, 3E's comprehensive coverage makes

this an ideal ongoing reference tool for those studying theoretical computing. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version. Data Structures & Theory of Computation Judith Gersting's Mathematical Structures for Computer Science has long been acclaimed for its clear presentation of essential concepts and an exceptional range of applications relevant to computer science majors. Now with this new edition, it is the first discrete mathematics textbook revised to meet the proposed new ACM/IEEE standards for the course. Now updated to include the most recent developments in Web and network technology, this best-selling introduction to computer science provides a breadth-first overview of the full range of topics in this dynamic discipline: algorithms, hardware design, computer organization, system software, language models, programming, compilation, theory of computation, applications, networks, artificial intelligence, and the impact of computers on society. The authors present these topics in the context of a big picture, - six-layer hierarchy of abstractions - starting with the algorithmic foundations of computer science, and working upward from low-level hardware concepts through virtual machine environments, languages, software, and applications programs to the social issues raised by computer technology. Each layer in the hierarchy builds on ideas and concepts presented earlier. An accompanying lab manual provides exploratory lab experiences tied to the text material. The Second Edition features the use of C++ for teaching the basics of programming, with a C++ compiler provided with the accompanying lab manual. This compilation includes a graphics library that students use to create shapes and images as part of a new section in Chapter 7 on "Graphical Programming." This textbook presents both a conceptual framework and detailed implementation guidelines for computer science (CS) teaching. Updated with the latest teaching approaches and trends and expanded with new learning activities, the content of this new edition

clearly written and structured to be applicable to all levels of CS education and for any teaching organization. Features: provides 11 detailed learning activities; reviews curriculum and cross-curriculum topics in CS; explores the benefits of CS education research; describes strategies for cultivating problem-solving skills, for assessing learning processes, and for dealing with pupils' misunderstandings; proposes active-learning-based classroom teaching methods, including lab-based teaching; discusses various types of questions that a CS instructor/trainer can use for a range of teaching situations; investigates thoroughly issues of lesson planning and course design; examines first field teaching experiences gained by CS teachers. Master the fundamentals of discrete mathematics with DISCRETE MATHEMATICS FOR COMPUTER SCIENCE with Student Solutions Manual CD-ROM! An increasing number of computer scientists from diverse areas are using discrete mathematical structures to explain concepts and problems and this mathematics text shows you how to express precise ideas in clear mathematical language. Through a wealth of exercises and examples, you will learn how mastering discrete mathematics will help you develop important reasoning skills that continue to be useful throughout your career.

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