

Chapter 1 : Concise Computer Mathematics | Download eBook PDF/EPUB

In general, the author assumes only a knowledge of calculus and linear algebra. The book is suitable as a text for a first course in numerical methods for mathematics students or students in neighboring fields, such as engineering, physics, and computer science.

Adapted from a modular undergraduate course on computational mathematics, Concise Computer Mathematics delivers an easily accessible, self-contained introduction to the basic notions of mathematics necessary for a computer science degree. The text reflects the need to quickly introduce students from a variety of educational backgrounds to a number of essential mathematical concepts. The material is divided into four units: The chapters contain a brief theoretical presentation of the topic, followed by a selection of problems which are direct applications of the theory and additional supplementary problems which may require a bit more work. Each chapter ends with answers or worked solutions for all of the problems. Upon publication, the first edition of the CRC Concise Encyclopedia of Mathematics received overwhelming accolades for its unparalleled scope, readability, and utility. Yet also unabated has been the dedication of author Eric Weisstein to collecting, cataloging, and referencing mathematical facts, formulas, and definitions. He has now updated most of the original entries and expanded the Encyclopedia to include additional pages of illustrated entries. The accessibility of the Encyclopedia along with its broad coverage and economical price make it attractive to the widest possible range of readers and certainly a must for libraries, from the secondary to the professional and research levels. For mathematical definitions, formulas, figures, tabulations, and references, this is simply the most impressive compendium available. A Concise Handbook of Mathematics, Physics, and Engineering Sciences takes a practical approach to the basic notions, formulas, equations, problems, theorems, methods, and laws that most frequently occur in scientific and engineering applications and university education. The authors pay special attention to issues that many engineers and students find difficult to understand. The first part of the book contains chapters on arithmetic, elementary and analytic geometry, algebra, differential and integral calculus, functions of complex variables, integral transforms, ordinary and partial differential equations, special functions, and probability theory. The second part discusses molecular physics and thermodynamics, electricity and magnetism, oscillations and waves, optics, special relativity, quantum mechanics, atomic and nuclear physics, and elementary particles. The third part covers dimensional analysis and similarity, mechanics of point masses and rigid bodies, strength of materials, hydrodynamics, mass and heat transfer, electrical engineering, and methods for constructing empirical and engineering formulas. The main text offers a concise, coherent survey of the most important definitions, formulas, equations, methods, theorems, and laws. Numerous examples throughout and references at the end of each chapter provide readers with a better understanding of the topics and methods. Additional issues of interest can be found in the remarks. For ease of reading, the supplement at the back of the book provides several long mathematical tables, including indefinite and definite integrals, direct and inverse integral transforms, and exact solutions of differential equations. Presenting a wide ranging perspective on the key concepts and developments that define the discipline, the "Concise Encyclopedia of Computer Science" is a valuable reference for all computer users. This concise edition is adapted from the fourth edition of "Encyclopedia of Computer Science" to meet the needs of students, teachers, and professionals in science and industry.

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Chapter 6 : Numerical Mathematics - Alfio Quarteroni, Riccardo Sacco, Fausto Saleri - Google Books

Topics covered include interpolation, the fast Fourier transform, iterative methods for solving systems of linear and nonlinear equations, numerical methods for solving ODEs, numerical methods for matrix eigenvalue problems, approximation theory, and computer arithmetic. In general, the author assumes only a knowledge of calculus and linear algebra.

Chapter 7 : AMS :: Robert Plato, Concise Numerical Mathematics

Concise Numerical Mathematics Based on a two-semester course taught at the Technical University of Berlin, this graduate textbook introduces iterative methods for nonlinear systems of equations, the numerical solution of initial and boundary value problems for ordinary differential equations, and eigenvalue problems for matrices.

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A Concise Introduction to Numerical Analysis Douglas N. Arnold School of Mathematics, University of Minnesota, Minneapolis, MN E-mail address: arnold@racedaydvl.com

Chapter 9 : A Concise Introduction to Geometric Numerical Integration - CRC Press Book

This book succinctly covers the key topics of numerical methods. While it is basically a survey of the subject, it has enough depth for the student to walk away with the ability to implement the methods by writing computer programs or by applying them to.