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Calculus Intuitive Physical Approach Mathematics

Refuting the accepted belief that mathematics is exact and infallible, the author examines the development of conflicting concepts of mathematics and their implications for the physical, applied, social, and computer sciences

This no-nonsense book translates mathematics education research-based insights into practical advice for a student audience. It covers every aspect of studying for a

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mathematics degree, from the most abstract intellectual challenges to the everyday business of interacting with lecturers and making good use of study time.

"This book is appropriate for an applied numerical analysis course for upper-level undergraduate and graduate students as well as computer science students. Actual programming is not covered, but an extensive range of topics includes round-off and function evaluation, real zeros of a function, integration, ordinary differential equations, optimization, orthogonal functions, Fourier series, and much more.

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1989 edition"--Provided by publisher.

Topics include applications of the derivative, sequences and series, the integral and continuous variates, discrete distributions, hypothesis testing, functions of several variables, and regression and correlation. 1970 edition. Includes 201 figures and 36 tables.

*Introduction to Applied Numerical Analysis
Essential Calculus Skills Practice Workbook
with Full Solutions*

*Technical Calculus with Analytic Geometry
A Cultural Approach*

The Loss of Certainty

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This book is an introduction to the language and standard proof methods of mathematics. It is a bridge from the computational courses (such as calculus or differential equations) that students typically encounter in their first year of college to a more abstract outlook. It lays a foundation for more theoretical courses such as topology, analysis and abstract algebra. Although it may be more meaningful to the student who has had

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some calculus, there is really no prerequisite other than a measure of mathematical maturity.

This survey focuses on the main trends in the field of calculus education.

Despite their variety, the findings reveal a cornerstone issue that is strongly linked to the formalism of calculus concepts and to the difficulties it generates in the learning and teaching process. As a complement to the main text, an

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extended bibliography with some of the most important references on this topic is included. Since the diversity of the research in the field makes it difficult to produce an exhaustive state-of-the-art summary, the authors discuss recent developments that go beyond this survey and put forward new research questions.

Classic text offers exceptionally precise coverage of partial differentiation, vectors, differential

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geometry, Stieltjes integral, infinite series, gamma function, Fourier series, Laplace transform, much more. Includes exercises and selected answers.

An authorised reissue of the long out of print classic textbook, Advanced Calculus by the late Dr Lynn Loomis and Dr Shlomo Sternberg both of Harvard University has been a revered but hard to find textbook for the advanced calculus course for decades. This book is based on an honors course in

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advanced calculus that the authors gave in the 1960's. The foundational material, presented in the unstarred sections of Chapters 1 through 11, was normally covered, but different applications of this basic material were stressed from year to year, and the book therefore contains more material than was covered in any one year. It can accordingly be used (with omissions) as a text for a year's course in advanced calculus, or as a

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text for a three-semester introduction to analysis. The prerequisites are a good grounding in the calculus of one variable from a mathematically rigorous point of view, together with some acquaintance with linear algebra. The reader should be familiar with limit and continuity type arguments and have a certain amount of mathematical sophistication. As possible introductory texts, we mention Differential and Integral Calculus by R

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Courant, Calculus by T Apostol, Calculus by M Spivak, and Pure Mathematics by G Hardy. The reader should also have some experience with partial derivatives. In overall plan the book divides roughly into a first half which develops the calculus (principally the differential calculus) in the setting of normed vector spaces, and a second half which deals with the calculus of differentiable manifolds.

Calculus Made Easy

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Linear Algebra

From Celestial Mechanics to Special Relativity

Mathematics for Operations Research

Intended for students who have already completed a one-year course in elementary calculus, this two-part treatment advances from functions of one variable to those of several variables. Solutions. 1971 edition.

Original, rigorous, and lively approach covers vector fields, one-parameter groups of diffeomorphisms, the Morse-Palais lemma, and differentiable submanifolds.

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Suitable for upper-level baccalaureate and graduate students of analysis. 1986 edition.

Introducing calculus at the basic level, this text covers hyperreal numbers and hyperreal line, continuous functions, integral and differential calculus, fundamental theorem, infinite sequences and series, infinite polynomials, more. 1979 edition.

This comprehensive history traces the development of mathematical ideas and the careers of the men responsible for them. Volume 1 looks at the disciplines origins in Babylon and Egypt, the creation of geometry and trigonometry by the Greeks, and the role of mathematics in the medieval and early modern periods.

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Volume 2 focuses on calculus, the rise of analysis in the 19th century, and the number theories of Dedekind and Dirichlet. The concluding volume covers the revival of projective geometry, the emergence of abstract algebra, the beginnings of topology, and the influence of Godel on recent mathematical study.

Microeconomics: An Intuitive Approach with Calculus
Infinitesimal Calculus

Mathematics and the Search for Knowledge

Second Year Calculus

Book of Proof

Basic textbook covers theory of matrices and its applications to systems of linear equations and related

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topics such as determinants, eigenvalues, and differential equations. Includes numerous exercises. Calculus For Dummies, 2nd Edition (9781119293491) was previously published as Calculus For Dummies, 2nd Edition (9781118791295). While this version features a new Dummies cover and design, the content is the same as the prior release and should not be considered a new or updated product. Slay the calculus monster with this user-friendly guide Calculus For Dummies, 2nd Edition makes calculus manageable—even if you're one of the many students who sweat at the thought of it. By breaking down differentiation and integration into digestible concepts, this guide helps you build a stronger foundation with a solid understanding of the big ideas at

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work. This user-friendly math book leads you step-by-step through each concept, operation, and solution, explaining the "how" and "why" in plain English instead of math-speak. Through relevant instruction and practical examples, you'll soon learn that real-life calculus isn't nearly the monster it's made out to be. Calculus is a required course for many college majors, and for students without a strong math foundation, it can be a real barrier to graduation. Breaking that barrier down means recognizing calculus for what it is—simply a tool for studying the ways in which variables interact. It's the logical extension of the algebra, geometry, and trigonometry you've already taken, and Calculus For Dummies, 2nd Edition proves that if you can master

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those classes, you can tackle calculus and win. Includes foundations in algebra, trigonometry, and pre-calculus concepts Explores sequences, series, and graphing common functions Instructs you how to approximate area with integration Features things to remember, things to forget, and things you can't get away with Stop fearing calculus, and learn to embrace the challenge. With this comprehensive study guide, you'll gain the skills and confidence that make all the difference. Calculus For Dummies, 2nd Edition provides a roadmap for success, and the backup you need to get there.

Skillfully organized introductory text examines origin of differential equations, then defines basic terms and outlines the general solution of a differential equation.

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Subsequent sections deal with integrating factors; dilution and accretion problems; linearization of first order systems; Laplace Transforms; Newton's Interpolation Formulas, more.

Starting with an abstract treatment of vector spaces and linear transforms, this introduction presents a corresponding theory of integration and concludes with applications to analytic functions of complex variables. 1959 edition.

***An Intuitive and Physical Approach (Second Edition)
Mathematics for the Nonmathematician
The History of the Calculus and Its Conceptual
Development
Calculus Refresher for Technical Men***

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How Calculus Reveals the Secrets of the Universe

In this delightful book, Levi turns math and physics upside down, revealing how physics can simplify proofs and lead to quicker solutions and new theorems, and how physical solutions can illustrate why results are true in ways lengthy mathematical calculations never can.

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts,

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introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

Erudite and entertaining overview follows development of mathematics from ancient Greeks to present. Topics include

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logic and mathematics, the fundamental concept, differential calculus, probability theory, much more. Exercises and problems.

The author, Chris McMullen, Ph.D., has over twenty years of experience teaching math skills to physics students. He prepared this comprehensive workbook (with full solutions to every problem) to share his strategies for mastering calculus. This workbook covers a variety of essential calculus skills, including: derivatives of polynomials, trig functions, exponentials, and logarithms the chain rule, product rule, and quotient rule second derivatives how to find the extreme values of a function limits, including l'Hopital's rule antiderivatives of polynomials, trig functions, exponentials, and logarithms definite and indefinite integrals techniques of

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integration, including substitution, trig sub, and integration by parts multiple integrals The goal of this workbook isn't to cover every possible topic from calculus, but to focus on the most essential skills needed to apply calculus to other subjects, such as physics or engineering

Infinite Powers

Mathematics for Machine Learning

Calculus of Variations

A Comprehensive Guide

Calculus For Dummies

Fresh, lively text serves as a modern introduction to the subject, with applications to the mechanics of

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systems with a finite number of degrees of freedom. Ideal for math and physics students.

Covers determinants, linear spaces, systems of linear equations, linear functions of a vector argument, coordinate transformations, the canonical form of the matrix of a linear operator, bilinear and quadratic forms, Euclidean spaces, unitary spaces, quadratic forms in Euclidean and unitary spaces, finite-dimensional

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space. Problems with hints and answers. Stimulating account of development of mathematics from arithmetic, algebra, geometry and trigonometry, to calculus, differential equations, and non-Euclidean geometries. Also describes how math is used in optics, astronomy, and other phenomena.

Practical and applications-oriented, this text explains effective procedures for performing mathematical tasks that arise in many fields, including

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operations research, engineering, systems sciences, statistics, and economics. Most of the examples and many of the 1,300 problems illustrate techniques, and nearly all of the tables display reference material for procedures. 1978 edition.

*Teaching and Learning of Calculus
How to Study for a Mathematics Degree
Mathematical Methods for Physics and
Engineering
Ordinary Differential Equations*

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An Elementary Textbook for Students of Mathematics, Engineering, and the Sciences

Written for today's technology student, TECHNICAL CALCULUS WITH ANALYTIC GEOMETRY prepares you for your future courses! With an emphasis on applications, this mathematics 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

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difficult concepts. Notations that are frequently encountered in technology are used throughout to help you prepare for further courses in your career. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Fluent description of the development of both the integral and differential calculus – its early beginnings in antiquity, medieval contributions, and a consideration of Newton and Leibniz.

Second Year Calculus: From Celestial Mechanics to Special Relativity covers multi-variable and

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vector calculus, emphasizing the historical physical problems which gave rise to the concepts of calculus. The book guides us from the birth of the mechanized view of the world in Isaac Newton's Mathematical Principles of Natural Philosophy in which mathematics becomes the ultimate tool for modelling physical reality, to the dawn of a radically new and often counter-intuitive age in Albert Einstein's Special Theory of Relativity in which it is the mathematical model which suggests new aspects of that reality. The development of this process is discussed from the modern viewpoint of

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differential forms. Using this concept, the student learns to compute orbits and rocket trajectories, model flows and force fields, and derive the laws of electricity and magnetism. These exercises and observations of mathematical symmetry enable the student to better understand the interaction of physics and mathematics.

A self-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

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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.

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Mathematical Thought From Ancient to Modern Times

Being a Very-simplest Introduction to Those Beautiful Methods of Reckoning which are Generally Called by the Terrifying Names of the Differential Calculus and the Integral Calculus Mathematics and the Physical World

***The Humongous Book of Algebra Problems
An Intuitive and Physical Approach***

When the numbers just don't add up... Following in the footsteps of the successful The Humongous Books of Calculus Problems, bestselling author

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Michael Kelley has taken a typical algebra workbook, and made notes in the margins, adding missing steps and simplifying concepts and solutions. Students will learn how to interpret and solve 1000 problems as they are typically presented in algebra courses-and become prepared to solve those problems that were never discussed in class but always seem to find their way onto exams. Annotations throughout the text clarify each problem and fill in missing steps needed to reach the solution, making this book like no other algebra workbook on the market.

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Application-oriented introduction relates the subject as closely as possible to science with explorations of the derivative; differentiation and integration of the powers of x ; theorems on differentiation, antidifferentiation; the chain rule; trigonometric functions; more. Examples. 1967 edition.

Practical Analysis in One Variable attempts to place the basic ideas of real analysis and numerical analysis together in an applied setting that is both accessible and motivational to young students. It includes background and review material,

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numerous examples, visualizations and alternate explanations of some key ideas, and a variety of exercises ranging from simple computations to analysis and estimates to computations on a computer. Students who work through the proofs and solve the practical problems in this book will develop a "hands-on" understanding of analysis that will serve them well in the future.

Examine microeconomic theory as a way of looking at the world as MICROECONOMICS: AN INTUITIVE APPROACH WITH CALCULUS, 2E builds on the basic economic foundation of individual behavior. Each

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chapter contains two sections. The A sections introduce concepts using intuition, conversational writing, everyday examples, and graphs with a focus on mathematical counterparts. The B sections then cover the same concepts with precise, accessible mathematical analyses that assume one semester of single-variable calculus. The book offers flexible topical coverage with four distinct paths: a non-game theory path through microeconomics, a path emphasizing game theory, a path emphasizing policy issues, or a path focused on business. Readers can use B sections to explore

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topics in greater depth. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The Mathematical Mechanic

Second Edition

Matrices and Linear Algebra

Revised

Using Physical Reasoning to Solve Problems

The third edition of this highly acclaimed undergraduate textbook is suitable for teaching all the mathematics for an undergraduate course in any of the physical sciences.

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As well as lucid descriptions of all the topics and many worked examples, it contains over 800 exercises. New stand-alone chapters give a systematic account of the 'special functions' of physical science, cover an extended range of practical applications of complex variables, and give an introduction to quantum operators. Further tabulations, of relevance in statistics and numerical integration, have been added. In this edition, half of the exercises are provided with hints and answers and, in a separate manual available to both students and their teachers, complete worked solutions. The remaining exercises have no hints, answers or worked solutions

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and can be used for unaided homework; full solutions are available to instructors on a password-protected web site, www.cambridge.org/9780521679718.

Ideal for self-instruction as well as for classroom use, this text improves understanding and problem-solving skills in analysis, analytic geometry, and higher algebra. Over 1,200 problems, with hints and complete solutions. 1963 edition.

*From preeminent math personality and author of *The Joy of x*, a brilliant and endlessly appealing explanation of calculus - how it works and why it makes our lives immeasurably better. Without calculus, we wouldn't*

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have cell phones, TV, GPS, or ultrasound. We wouldn't have unraveled DNA or discovered Neptune or figured out how to put 5,000 songs in your pocket. Though many of us were scared away from this essential, engrossing subject in high school and college, Steven Strogatz's brilliantly creative, down-to-earth history shows that calculus is not about complexity; it's about simplicity. It harnesses an unreal number--infinity--to tackle real-world problems, breaking them down into easier ones and then reassembling the answers into solutions that feel miraculous. Infinite Powers recounts how calculus tantalized and thrilled its inventors, starting

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with its first glimmers in ancient Greece and bringing us right up to the discovery of gravitational waves (a phenomenon predicted by calculus). Strogatz reveals how this form of math rose to the challenges of each age: how to determine the area of a circle with only sand and a stick; how to explain why Mars goes "backwards" sometimes; how to make electricity with magnets; how to ensure your rocket doesn't miss the moon; how to turn the tide in the fight against AIDS. As Strogatz proves, calculus is truly the language of the universe. By unveiling the principles of that language, Infinite Powers makes us marvel at the world anew.

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Calculus An Intuitive and Physical Approach (Second Edition) Courier Corporation

Practical Analysis in One Variable Mathematics

Problems and Solutions

Advanced Calculus

Differential Calculus

Requires a minimum of technical knowledge and gives an illuminating oversight of the historical developments...with many interesting observations along the

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way.--Proceedings of the Edinburgh Mathematical Society The lively writing makes this suitable supplementary reading for advanced undergraduates from many disciplines. An extensive and often technical bibliography is included for those who want to go further.

Calculus

Calculus and Statistics

Modern Calculus and Analytic Geometry