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Calculus An Intuitive And Physical Approach Second Edition Dover Books On Mathematics

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, numerous examples, visualizations and alternate explanations

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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.

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

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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

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copiously illustrated, amply cross-referenced, and fully indexed.

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.

Multivariable Mathematics combines linear algebra and multivariable mathematics in a rigorous approach. The material is integrated to emphasize the recurring

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*theme of implicit versus explicit that persists in linear algebra and analysis. In the text, the author includes all of the standard computational material found in the usual linear algebra and multivariable calculus courses, and more, interweaving the material as effectively as possible, and also includes complete proofs. * Contains plenty of examples, clear proofs, and significant motivation for the crucial concepts. * Numerous exercises of varying levels of difficulty, both computational and more proof-*

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*oriented. * Exercises are arranged in
order of increasing difficulty.*

*A Complete Guide to the Laws of the
Universe*

Mathematics for the Nonmathematician

The Humongous Book of Algebra Problems

Infinite Powers

Mathematics

*Microeconomics: An Intuitive Approach with
Calculus*

*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. With a fresh geometric approach that incorporates more than 250 illustrations, this textbook sets itself apart from all others in advanced calculus. Besides the classical capstones--the change of variables formula, implicit and inverse function theorems, the integral theorems of Gauss and Stokes--the text treats other important topics in differential analysis, such as Morse's lemma and the Poincaré lemma. The ideas behind most topics can be

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understood with just two or three variables. The book incorporates modern computational tools to give visualization real power. Using 2D and 3D graphics, the book offers new insights into fundamental elements of the calculus of differentiable maps. The geometric theme continues with an analysis of the physical meaning of the divergence and the curl at a level of detail not found in other advanced calculus books. This is a textbook for undergraduates and graduate students in mathematics, the physical sciences, and economics. Prerequisites are an introduction to

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linear algebra and multivariable calculus. There is enough material for a year-long course on advanced calculus and for a variety of semester courses--including topics in geometry. The measured pace of the book, with its extensive examples and illustrations, make it especially suitable for independent study.

This book gives a remarkably fine account of the influences mathematics has exerted on the development of philosophy, the physical sciences, religion, and the arts in Western life.

This volume is, as may be readily apparent, the

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fruit of many years' labor in archives and libraries, unearthing rare books, researching Nachlässe, and above all, systematic comparative analysis of fecund sources. The work not only demanded much time in preparation, but was also interrupted by other duties, such as time spent as a guest professor at universities abroad, which of course provided welcome opportunities to present and discuss the work, and in particular, the organizing of the 1994 International Graßmann Conference and the subsequent editing of its proceedings. If it is not possible to be precise about the amount of

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time spent on this work, it is possible to be precise about the date of its inception. In 1984, during research in the archive of the École polytechnique, my attention was drawn to the way in which the massive rupture that took place in 1811—precipitating the change back to the synthetic method and replacing the limit method by the method of the quantités infiniment petites—significantly altered the teaching of analysis at this first modern institution of higher education, an institution originally founded as a citadel of the analytic method.

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Applied Analysis on Graphs for Computational Science

Nearly 900 Statistics Problems with Comprehensive Solutions for All the Major Topics of Statistics

Instructors Manual for Parts One and Two

Elementary Calculus

Calculus Refresher for Technical Men

COLLEGE ALGEBRA AND CALCULUS: AN APPLIED APPROACH, Second Edition provides your students a comprehensive resource for their college algebra and applied calculus courses. The mathematical concepts and

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applications are consistently presented in the same tone and pedagogy to promote confidence and a smooth transition from one course to the next. The consolidation of content for two courses in a single text saves you time in your course--and saves your students the cost of an extra textbook. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Application-oriented introduction relates the subject as closely as possible to science. In-depth explorations of the derivative, the differentiation and integration of the powers of x , and theorems on differentiation and antidifferentiation lead to a definition of the chain rule and examinations of trigonometric functions, logarithmic and exponential functions, techniques

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of integration, polar coordinates, much more. Clear-cut explanations, numerous drills, illustrative examples. 1967 edition. Solution guide available upon request.

****WINNER OF THE 2020 NOBEL PRIZE IN PHYSICS**** The Road to Reality is the most important and ambitious work of science for a generation. It provides nothing less than a comprehensive account of the physical universe and the essentials of its underlying mathematical theory. It assumes no particular specialist knowledge on the part of the reader, so that, for example, the early chapters give us the vital mathematical background to the physical theories explored later in the book. Roger Penrose's purpose is to describe as clearly as possible our present understanding of the universe and to convey a feeling for its deep beauty and philosophical

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implications, as well as its intricate logical interconnections. The Road to Reality is rarely less than challenging, but the book is leavened by vivid descriptive passages, as well as hundreds of hand-drawn diagrams. In a single work of colossal scope one of the world's greatest scientists has given us a complete and unrivalled guide to the glories of the universe that we all inhabit. 'Roger Penrose is the most important physicist to work in relativity theory except for Einstein. He is one of the very few people I've met in my life who, without reservation, I call a genius' Lee Smolin

This unique text brings together into a single framework current research in the three areas of discrete calculus, complex networks, and algorithmic content extraction. Many example applications from several fields of computational

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science are provided.

Second Year Calculus

Linear Algebra, Multivariable Calculus, and Manifolds

How Calculus Reveals the Secrets of the Universe

An Intuitive and Physical Approach

Mathematics in Western Culture

From Celestial Mechanics to Special Relativity

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

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students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, 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

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

Exercises and problems.

The classic introduction to the fundamentals of calculus Richard Courant's classic text Differential and Integral Calculus is an essential text for those preparing for a career in physics or applied math. Volume 1 introduces the foundational concepts of "function" and "limit", and

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offers detailed explanations that illustrate the "why" as well as the "how". Comprehensive coverage of the basics of integrals and differentials includes their applications as well as clearly-defined techniques and essential theorems. Multiple appendices provide supplementary explanation and author notes, as well as solutions and hints for all in-text problems.

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 chapter contains two sections. The A sections introduce concepts using intuition, conversational writing, everyday

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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 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.

An Intuitive Introduction

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The Humongous Book of Statistics Problems

Advanced Calculus

Mathematics for Machine Learning

An Intuitive and Physical Approach (Second Edition)

College Algebra and Calculus: An Applied Approach

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 advanced calculus that the authors gave in the 1960's. The foundational material,

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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 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

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of mathematical sophistication. As possible introductory texts, we mention Differential and Integral Calculus by R 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.

Refuting the accepted belief that mathematics is exact and infallible, the author examines the development of

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conflicting concepts of mathematics and their implications for the physical, applied, social, and computer sciences

Fresh, lively text serves as a modern introduction to the subject, with applications to the mechanics of systems with a finite number of degrees of freedom. Ideal for math and physics students.

This is an intuitively motivated presentation of many topics in classical mechanics and related areas of control theory and calculus of variations. All topics throughout the book are treated with zero tolerance for unrevealing definitions and for proofs which leave the reader in the

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dark. Some areas of particular interest are: an extremely short derivation of the ellipticity of planetary orbits; a statement and an explanation of the "tennis racket paradox"; a heuristic explanation (and a rigorous treatment) of the gyroscopic effect; a revealing equivalence between the dynamics of a particle and statics of a spring; a short geometrical explanation of Pontryagin's Maximum Principle, and more. In the last chapter, aimed at more advanced readers, the Hamiltonian and the momentum are compared to forces in a certain static problem. This gives a palpable physical meaning to some seemingly abstract concepts and

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theorems. With minimal prerequisites consisting of basic calculus and basic undergraduate physics, this book is suitable for courses from an undergraduate to a beginning graduate level, and for a mixed audience of mathematics, physics and engineering students. Much of the enjoyment of the subject lies in solving almost 200 problems in this book.

Calculus

Calculus and Statistics

Calculus: an Intuitive and Physical Approach

Calculus of Variations

Second Edition

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Differential and Integral Calculus

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 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

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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 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

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"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.

An introductory textbook for people who have not programmed before. Covers basic MATLAB programming with emphasis on modeling and simulation of physical systems.

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 differential forms. Using this

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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.

Calculus An Intuitive and Physical Approach Courier Corporation

Linear Algebra

The History of the Calculus and Its Conceptual Development

A Geometric View

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Approach Second Edition Dover Books On
Mathematics

Revised

Calculus: An Intuitive and Physical Approach
Discrete Calculus

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

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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.

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.

Fluent description of the development of both the integral and differential calculus — its early beginnings

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in antiquity, medieval contributions, and a consideration of Newton and Leibniz.

Following the successful, 'The Humongous Books', in calculus and algebra, bestselling author Mike Kelley takes a typical statistics workbook, full of solved problems, and writes notes in the margins, adding missing steps and simplifying concepts and solutions. By learning how to interpret and solve problems as they are presented in statistics courses, students prepare to solve those difficult problems that were never discussed in class but are always on exams. - With annotated notes and explanations of missing steps throughout, like no

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other statistics workbook on the market - An award-winning former math teacher whose website (calculus-help.com) reaches thousands every month, providing exposure for all his books

Classical Mechanics with Calculus of Variations and Optimal Control

The Loss of Certainty

An Intuitive and Physical Approach. Instructor's manual for parts one and two

A Differential Forms Approach

Conflicts Between Generalization, Rigor, and Intuition

The Road to Reality

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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 space. Problems with hints and answers. 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. Thought-provoking and accessible in approach, this

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updated and expanded second edition of the Calculus: An Intuitive and Physical Approach (Second Edition) (Dover Books on Ma provides a user-friendly introduction to the subject, Taking a clear structural framework, it guides the reader through the subject's core elements. A flowing writing style combines with the use of illustrations and diagrams throughout the text to ensure the reader understands even the most complex of concepts. This succinct and enlightening overview is a required reading for advanced graduate-level students. We hope you find this book useful in shaping your future career. Feel free to send us your enquiries related to our publications to info@risepress.pw Rise Press

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This book is a high-level introduction to vector calculus based solidly on differential forms. Informal but sophisticated, it is geometrically and physically intuitive yet mathematically rigorous. It offers remarkably diverse applications, physical and mathematical, and provides a firm foundation for further studies.

Vol.: 2

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Practical Analysis in One Variable

Mathematics and the Physical World

Calculus an Intuitive and Physical Approach Part

Modern Calculus and Analytic Geometry