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BROCK CURTIS

Introduction to Trigonometry SIAM
This scientific biography of the mathematician Joseph Liouville is divided into two parts. The first part is a chronological account of Liouville's career including a description of the institutions he worked in, his relations with his teachers, colleagues and students, and the historical context of his works. It portrays the French scientific community in a period when Germany and England had surpassed France as the leading nations in mathematics and physics. The second part of the book gives a detailed analysis of Liouville's major contributions to mathematics and mechanics. The gradual development of Liouville's ideas, as reflected in his publications and notebooks, are related to the works of his predecessors and his contemporaries as well as to later developments in the field. On the basis of Liouville's unpublished notes the book reconstructs Liouville's hitherto unknown theories of stability of rotating masses of fluid, potential theory, Galois theory and electrodynamics. It also incorporates valuable added information from Liouville's notes regarding his works on differentiation of arbitrary order, integration in finite terms, Sturm-Liouville theory, transcendental numbers, doubly periodic functions, geometry and mechanics.
The Encyclopædia Britannica SIAM
Non-standard finite element methods, in particular mixed methods, are central to many applications. In this text the authors, Boffi, Brezzi and Fortin present a general framework, starting with a finite dimensional presentation, then moving on to formulation in Hilbert spaces and finally considering approximations, including stabilized methods and eigenvalue problems. This book also provides an introduction to standard finite element approximations, followed by the construction of elements for the approximation of mixed formulations in H(div) and H(curl). The general theory is applied to some classical examples: Dirichlet's problem, Stokes' problem, plate problems, elasticity and electromagnetism.
Applications of Stochastic Programming Springer Science & Business Media
Here, at last, is the massively updated and augmented second edition of this landmark encyclopedia. It contains approximately 1000 entries dealing in depth with the history of the scientific, technological and medical accomplishments of cultures outside of the United States and Europe. The entries consist of fully updated articles together with hundreds of entirely new topics. This unique reference work includes intercultural articles on broad topics such as mathematics and astronomy as well as thoughtful philosophical articles on concepts and ideas related to the study of non-Western Science, such as rationality, objectivity, and method. You'll also find material on religion and science, East and West, and magic and science.
The Mathematical Review State University of New York Press
This volume collects most recent work on the role of technology in mathematics education. It offers fresh insight and understanding of the many ways in which technological resources can improve the teaching and learning of mathematics. The first section of the volume focuses on the question how a proposed mathematical task in a technological environment can influence the acquisition of knowledge and what elements are important to retain in the design of mathematical tasks in computing environments. The use of white smart boards, platforms as Moodle, tablets and

smartphones have transformed the way we communicate both inside and outside the mathematics classroom. Therefore the second section discussed how to make efficient use of these resources in the classroom and beyond. The third section addresses how technology modifies the way information is transmitted and how mathematical education has to take into account the new ways of learning through connected networks as well as new ways of teaching. The last section is on the training of teachers in the digital era. The editors of this volume have selected papers from the proceedings of the 65th, 66th and 67th CIEAEM conference, and invited the correspondent authors to contribute to this volume by discussing one of the four important topics. The book continues a series of sourcebooks edited by CIEAEM, the Commission Internationale pour l'Étude et l'Amélioration de l'Enseignement des Mathématiques / International Commission for the Study and Improvement of Mathematics Education.

Foundations of Knowledge American Mathematical Soc.

In this unique insight into the history and philosophy of mathematics and science in the mediaeval Arab world, the eminent scholar Roshdi Rashed illuminates the various historical, textual and epistemic threads that underpinned the history of Arabic mathematical and scientific knowledge up to the seventeenth century. The first of five wide-ranging and comprehensive volumes, this book provides a detailed exploration of Arabic mathematics and sciences in the ninth and tenth centuries. Extensive and detailed analyses and annotations support a number of key Arabic texts, which are translated here into English for the first time. In this volume Rashed focuses on the traditions of celebrated polymaths from the ninth and tenth centuries 'School of Baghdad' - such as the Banū Mūsā, Thābit ibn Qurra, Ibrāhīm ibn Sinān, Abū Ja´far al-Khāzin, Abū Sahl Wayjan ibn Rustām al-Qūhī - and eleventh-century Andalusian mathematicians like Abū al-Qāsim ibn al-Samh, and al-Mu'taman ibn Hūd. The Archimedean-Apollonian traditions of these polymaths are thematically explored to illustrate the historical and epistemological development of 'infinitesimal mathematics' as it became more clearly articulated in the eleventh-century influential legacy of al-Hasan ibn al-Haytham ('Alhazen'). Contributing to a more informed and balanced understanding of the internal currents of the history of mathematics and the exact sciences in Islam, and of its adaptive interpretation and assimilation in the European context, this fundamental text will appeal to historians of ideas, epistemologists, mathematicians at the most advanced levels of research.

The Mathematics Teacher Springer Science & Business Media

During the last decade there were significant advances in the study of studentsÂ learning and problem solving in mathematics, and in the study of classroom instruction. Because these two research programs usually have been conducted individually, it is generally agreed now that there is an increasing need for an integrated research program. This book represents initial discussions and development of a unified paradigm for studying teaching in mathematics that builds upon both cognitive as well as instructional research.

Annals of Mathematics World Scientific

Modeling Students' Mathematical Modeling Competencies offers welcome clarity and focus to the international research and professional community in mathematics, science, and engineering education, as well as those involved in the sciences of teaching and learning these subjects.

Ellipsoidal Harmonics Cambridge University Press

ALAN J. BISHOP Monash University, Clayton, Victoria, Australia RATIONALE Mathematics Education is becoming a well-documented field with many books, journals and international conferences focusing on a variety of aspects relating to theory, research and practice. That documentation also reflects the fact that the field has expanded enormously in the last twenty years. At the 8th International Congress on Mathematics Education (ICME) in Seville, Spain, for example, there were 26 specialist Working Groups and 26 special ist Topic Groups, as well as a host of other group activities. In 1950 the 'Commission Internationale pour I 'Etude et l' Amelioration de l'Enseignement des Mathematiques' (CIEAEM) was formed and twenty years ago another active group, the 'International Group for the Psychology of Mathematics Education' (PME), began at the third ICME at Karlsruhe in 1976. Since then several other specialist groups have been formed, and are also active through regular conferences and publications, as documented in Edward Jacobsen's Chapter 34 in this volume.

The Academy Springer Nature

This book provides middle school teachers with a firm pedagogical foundation based on the manner in which students learn the mathematics being taught.

The Comparative Approach in Area Studies and the Disciplines: Problems of Teaching and Research on Asia World Scientific

Includes also Minutes of [the] Proceedings, and Report of [the] President and Council for the year, separately published 1965/66- as its Annual report.

Tokens of Exchange Springer

Unlike abstract approaches to advanced control theory, this volume presents key concepts through concrete examples. Once the basic fundamentals are established, readers can apply them to solve other control problems of partial differential equations.

Revue Semestrielle Des Publications Mathématiques State University of New York Press

The problem of translation has become increasingly central to critical reflections on modernity and its universalizing processes. Approaching translation as a symbolic and material exchange among peoples and civilizations—and not as a purely linguistic or literary matter, the essays in Tokens of Exchange focus on China and its interactions with the West to historicize an economy of translation. Rejecting the familiar regional approach to non-Western societies, contributors contend that "national histories" and "world history" must be read with absolute attention to the types of epistemological translatability that have been constructed among the various languages and cultures in modern times. By studying the production and circulation of meaning as value in areas including history, religion, language, law, visual art, music, and pedagogy, essays consider exchanges between Jesuit and Protestant missionaries and the Chinese between the seventeenth and nineteenth centuries and focus on the interchanges occasioned by the spread of capitalism and imperialism. Concentrating on ideological reciprocity and nonreciprocity in science, medicine, and cultural pathologies, contributors also posit that such exchanges often lead to racialized and essentialized ideas about culture, sexuality, and nation. The collection turns to the role of language itself as a site of the universalization of knowledge in its contemplation of such processes as the invention of Basic English and the global teaching of the English language. By focusing on the moments wherein meaning-value is exchanged in the translation from one language to another, the essays highlight the circulation of the global in the local as they address the role played by historical translation in the universalizing processes of modernity and globalization. The collection will engage students and scholars of global cultural processes, Chinese studies, world history, literary studies, history of science, and anthropology, as well as cultural and postcolonial studies. Contributors. Jianhua Chen, Nancy Chen, Alexis Dudden Eastwood, Roger Hart, Larissa Heinrich, James Hevia, Andrew F. Jones, Wan Shun Eva Lam, Lydia H. Liu, Deborah T. L. Sang, Haun Saussy, Q. S. Tong, Qiong Zhang

The International Commission on Mathematical Instruction, 1908-2008: People, Events, and Challenges in Mathematics Education Springer Science & Business Media

ABOUT THE BOOK:This textbook is different than other trigonometry books in that the reader is expected to do more than read the book and is expected to study the material in the book by working out examples rather than just reading about them. So this book is not just about mathematical content but is also about the process of learning and doing mathematics. That is, this book is designed not to be just casually read but rather to be engaged.Since this can be a difficult task, there are several features of the book designed to assist students in this endeavor. In particular, most sections of the book start with a beginning activity that review prior mathematical work that is necessary for the new section or introduce new concepts and definitions that will be used later in that section. Each section also contains several progress checks that are short exercises or activities designed to help readers determine if they are understanding the material. This mathematics work meets the objectives of the program for scientific classes in the final year, includes:1-Research activities.2-A summary of the course.3-Exercises pages of various shapes to help everyone work at their own pace. TABLE OF CONTENTS:*Angle measurement units*The Radian *Oriented angle *Introducing Sine, Cosine and Tangent*Trigonometric Identities and Equations*Trigonometric Equations, and Inequalites*Exercises

Elementary Feedback Stabilization of the Linear Reaction-Convection-Diffusion Equation and the Wave Equation State University of New York Press

The book presents the history of ICMI trough a prosopographical approach. In other words, it pays a lot of attention to the actors of the International movement. The portraits of the members of the ICMI Central Committees (1908-1936) and ICMI Executive Committees (1952-2008), and other eminent figures in ICMI history, who have passed away in the first 100 years of its life, are the guiding thread of the volume. Each portrait includes: · Biographical information · An outline of the various contributions made by the individual in question to the study of problems pertaining to mathematics teaching/education · Primary bibliography · Secondary with particular attention to the publications concerning the teaching of mathematics · Images: photos, book frontispieces, relevant manuscripts The authors of the portraits (30 altogether) are researchers in the history of mathematics, mathematics, and mathematics education. The focus on the officer's role within ICMI and on his/her contributions to mathematics education, make the portraits different from usual biographies. In particular, since most officers were active mathematicians, the portraits shed light on aspects of their lesser-known activity. Connecting chapters place the action of these figures in the historical context and in the different phases of ICMI history.

The National Union Catalog, Pre-1956 Imprints Duke University Press

This entertaining book presents a collection of 180 famous mathematical puzzles and intriguing elementary problems that great mathematicians have posed, discussed, and/or solved. The selected problems do not require advanced mathematics, making this book accessible to a variety of readers. Mathematical recreations offer a rich playground for both amateur and professional mathematicians. Believing that creative stimuli and aesthetic considerations are closely related, great mathematicians from ancient times to the present have always taken an interest in puzzles and diversions. The goal of this book is to show that famous mathematicians have all communicated brilliant ideas, methodological approaches, and absolute genius in mathematical thoughts by using recreational mathematics as a framework. Concise biographies of many mathematicians mentioned in the text are also included. The majority of the mathematical problems presented in this book originated in number theory, graph theory, optimization, and probability. Others are based on combinatorial and chess problems, while still others are geometrical and arithmetical puzzles. This book is intended to be both entertaining as well as an introduction to various intriguing mathematical topics and ideas. Certainly, many stories and famous puzzles can be very useful to prepare classroom lectures, to inspire and amuse students, and to instill affection for mathematics.

Recent Developments in Computational Finance Springer Science & Business Media

A considerable number of problems have been included. Many of these are quite simple; others are more in the nature of proposed research problems.

Green's Functions and Transfer Functions Handbook American Mathematical Soc.

Chaos theory deals with the description of motion (in a general sense) which cannot be predicted in the long term although produced by deterministic system, as well exemplified by meteorological phenomena. It directly comes from the Lunar theory — a three-body problem — and the difficulty encountered by astronomers to accurately predict the long-term evolution of the Moon using "Newtonian" mechanics. Henri Poincaré's deep intuitions were at the origin of chaos theory. They also led the meteorologist Edward Lorenz to draw the first chaotic attractor ever published. But the main idea consists of plotting a curve representative of the system evolution rather than finding an analytical solution as commonly done in classical mechanics. Such a novel approach allows the description of population interactions and the solar activity as well. Using the original sources, the book draws on the history of the concepts underlying chaos theory from the 17th century to the last decade, and by various examples, show how general is this theory in a wide range of applications: meteorology, chemistry, populations, astrophysics, biomedicine, etc.

A Bibliography of Recreational Mathematics Routledge

A sequel to Unexpected Links Between Egyptian and Babylonian Mathematics (World Scientific, 2005), this book is based on the authorOCOs intensive and ground breaking studies of the long history of Mesopotamian mathematics, from the late 4th to the late 1st millennium BC. It is argued in the book that several of the most famous Greek mathematicians appear to have been familiar with various aspects of Babylonian OC metric algebra, OCO a convenient name for an elaborate combination of geometry, metrology, and quadratic equations that is known from both Babylonian and pre-Babylonian mathematical clay tablets. The bookOCOs use of OC metric algebra diagramsOCO in the Babylonian style, where the side lengths and areas of geometric figures are explicitly indicated, instead of wholly abstract OC lettered diagramsOCO in the Greek style, is essential for an improved understanding of many interesting propositions and constructions in Greek mathematical works. The authorOCOs comparisons with Babylonian mathematics also lead to new answers to some important open questions in the history of Greek mathematics."

Integrating Research on Teaching and Learning Mathematics World Scientific

The inquiry into the foundations of knowledge is a systematic inquiry into the problem of truth. This problem constitutes one of the three main concerns of philosophical analysis, the others being the problem of beauty and the problem of goodness. Thus Evangelos P. Papanoutsos, Greece s leading contemporary philosopher, introduces this third book of his Trilogy of the Mind. The first two volumes covered aesthetics and ethics; this one is a major work in epistemology. Combining

rigorous analysis with thorough-going scholarship, displaying an intimate acquaintance with the physical and humanistic sciences, and drawing on a deep understanding of philosophical method and the history of philosophy, Professor Papanoutsos is held in high esteem by his European colleagues. This translation of his masterpiece will enhance his reputation and influence among readers of English. The themes of The Foundation of Knowledge range over the topics that have been continually challenging to the modern era of philosophers: being and consciousness, experience and reason, common sense and science, and the domains of knowledge, including the nature of philosophical knowledge. Special attention is paid to the analysis of theoretical consciousness, the problems of categorical thinking, the theory of judgment, mathematics and logic, and the limits of historical understanding.

Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures

American Mathematical Soc.

Consisting of two parts, this book presents papers describing publicly available stochastic programming systems that are operational. It presents a diverse collection of application papers in areas such as production, supply chain and scheduling, gaming, environmental and pollution control, financial modeling, telecommunications, and electricity.