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RRQHM0 - BRIGGS TRISTIAN

El cerebro de los matemáticos plantea una pregunta, muy provocadora, acerca de los matemáticos más brillantes y excéntricos del mundo: ¿fueron brillantes gracias a su excentricidad o a pesar de ella? En este entretenido y estimulante libro, David Ruelle, el célebre físico matemático que ayudó a formular la teoría del caos, nos brinda una singular crónica de los célebres matemáticos que ha conocido y de sus rarezas, manías, tragedias personales, fechorías, enajenamientos, trágicos finales y de la sublime e inefable belleza de sus descubrimientos más impresionantes. Ruelle no se muerde la lengua al exponer sus opiniones personales, reveladoras y profundas, acerca de Turing y otros matemáticos como Alexander Grothendieck, René Thom, Bernhard Riemann y Felix Klein. Pero este libro es mucho más que una serie de confidencias matemáticas. Cada capítulo examina una idea matemática trascendental y las mentes visionarias que la produjeron y, sobre esa base, el autor explora las consecuencias filosóficas de la misma, ilustrando con perspicacia los singulares y creativos procesos mentales de los matemáticos, demostrando que las matemáticas son el marco más propicio para plantear preguntas acerca del significado, la belleza y la naturaleza de la realidad. El cerebro de los matemáticos introduce al lector en el mundo -y en los cerebros- de los matemáticos. Es un viaje que tardará en olvidar.
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. 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 teach-

ers, complete worked solutions. The remaining exercises have no hints, answers or worked solutions and can be used for unaided homework; full solutions are available to instructors on a password-protected web site, www.cambridge.org/9780521679718.

"Neutrosophic Computing and Machine Learning" (NCML) es una revista académica que ha sido creada para publicaciones de estudios avanzados en neutrosofía, conjunto neutrosófico, lógica neutrosófica, probabilidad neutrosófica, estadística neutrosófica, enfoques neutrosóficos para el aprendizaje automático, etc. y sus aplicaciones en cualquier campo.

Boris Pavlov (1936-2016), to whom this volume is dedicated, was a prominent specialist in analysis, operator theory, and mathematical physics. As one of the most influential members of the St. Petersburg Mathematical School, he was one of the founders of the Leningrad School of Non-self-adjoint Operators. This volume collects research papers originating from two conferences that were organized in memory of Boris Pavlov: “Spectral Theory and Applications”, held in Stockholm, Sweden, in March 2016, and “Operator Theory, Analysis and Mathematical Physics – OTAMP2016” held at the Euler Institute in St. Petersburg, Russia, in August 2016. The volume also includes water--color paintings by Boris Pavlov, some personal photographs, as well as tributes from friends and colleagues.

Physicists firmly believe that the differential equations of nature should be hyperbolic so as to exclude action at a distance; yet the equations of irreversible thermodynamics - those of Navier-Stokes and Fourier - are parabolic. This incompatibility between the expectation of physicists and the classical laws of thermodynamics has prompted the formulation of extended thermodynamics. After describing the motifs and early evolution of this new branch of irreversible thermodynamics, the authors apply the theory to mon-atomic gases, mixtures of gases, relativistic gases, and "gases" of phonons and photons. The discussion brings into perspective the various phenomena called second sound, such as heat propagation, propagation of shear stress and concentration, and the second sound in liquid helium. The formal mathematical structure of extended thermodynamics is exposed and the theory is shown to be fully compatible with the kinetic theory of gases. The study closes with the testing of extended thermodynamics through the exploitation of its predictions for measurements of light scattering and sound propagation.

Alfred Tarski (1901–1983) was a renowned Polish/American mathematician, a giant of the twentieth century, who helped establish the foundations of geometry, set theory, model theory, algebraic logic and universal algebra. Throughout his career, he taught mathematics and logic at universities and sometimes in secondary schools. Many of his writings before 1939 were in Polish and remained inaccessible to most mathematicians and historians until now. This self-contained book focuses on Tarski’s early contributions to geometry and mathematics education, including the famous Banach–Tarski paradoxical decomposition of a sphere as well as high-school mathematical topics and pedagogy. These themes are significant since Tarski’s later research on geometry and its founda-

tions stemmed in part from his early employment as a high-school mathematics teacher and teacher-trainer. The book contains careful translations and much newly uncovered social background of these works written during Tarski's years in Poland. Alfred Tarski: Early Work in Poland serves the mathematical, educational, philosophical and historical communities by publishing Tarski's early writings in a broadly accessible form, providing background from archival work in Poland and updating Tarski's bibliography. A list of errata can be found on the author Smith's personal webpage.

Statistical Physics and Beyond brought together graduate students and young researchers in this field exchanging new information on some of the main topics related to statistical physics that are of current interest. Special emphasis was placed on interdisciplinary areas which are becoming more important every day, such as biological physics, atmospheric physics and nanoscience.

This book brings together reviews from leading international authorities on the developments in the study of dark matter and dark energy, as seen from both their cosmological and particle physics side. Studying the physical and astrophysical properties of the dark components of our Universe is a crucial step towards the ultimate goal of unveiling their nature. The work developed from a doctoral school sponsored by the Italian Society of General Relativity and Gravitation. The book starts with a concise introduction to the standard cosmological model, as well as with a presentation of the theory of linear perturbations around a homogeneous and isotropic background. It covers the particle physics and cosmological aspects of dark matter and (dynamical) dark energy, including a discussion of how modified theories of gravity could provide a possible candidate for dark energy. A detailed presentation is also given of the possible ways of testing the theory in terms of cosmic microwave background, galaxy redshift surveys and weak gravitational lensing observations. Included is a chapter reviewing extensively the direct and indirect methods of detection of the hypothetical dark matter particles. Also included is a self-contained introduction to the techniques and most important results of numerical (e.g. N-body) simulations in cosmology. " This volume will be useful to researchers, PhD and graduate students in Astrophysics, Cosmology Physics and Mathematics, who are interested in cosmology, dark matter and dark energy.

Esta obra destinada a todos los estudiantes y a los profesionales de las ciencias básicas de la ingeniería, presenta las fórmulas fundamentales de las Matemáticas, Física y Química. VENTAJAS COMPETITIVAS Presentar al lector en forma clara, concisa y ordenada las fórmulas de mayor interés para sus actividades Su tamaño es tan práctico que permite llevarlo en el bolsillo del pantalón. No es el clásico formulario donde solo se presenta un área del conocimiento. Presenta un conjunto de fórmulas que son de gran valor para los estudiantes materias como matemáticas, física, química y otras. Datos y formulas se muestran de forma precisa y concisa para que se pueda interpretar y entender al momento Útil para el trabajo diario en la escuela, el laboratorio, investigación, en el estudio, este manual reúne las fórmulas fundamentales de las Matemáticas, Física y

Química.
Organizadores: Enio Freire de Paula, Márcia Cristina de Costa Trindade Cyrino
O livro reúne múltiplos olhares a respeito da formação de PEM, por meio da discussão de investigações já realizadas e uma ampla revisão de literatura a respeito de dessa temática. Tais reflexões, apresentam colaborações significativas para o campo da Educação Matemática brasileira, especialmente aos interessados na diversidade envolta aos contextos formativos de professores que ensinam matemática.
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DOI: 10.31560/pimentacultural/2021.588
The goal of this book is to present a unified mathematical treatment of diverse problems in mathematics, physics, computer science, and engineer ing using geometric algebra. Geometric algebra was invented by William Kingdon Clifford in 1878 as a unification and generalization of the works of Grassmann and Hamilton, which came more than a quarter of a century before. Whereas the algebras of Clifford and Grassmann are well known in advanced mathematics and physics, they have never made an impact in elementary textbooks where the vector algebra of Gibbs-Heaviside still predominates. The approach to Clifford algebra adopted in most of the ar ticles here was pioneered in the 1960s by David Hestenes. Later, together with Garret Sobczyk, he developed it into a unified language for math ematics and physics. Sobczyk first learned about the power of geometric algebra in classes in electrodynamics and relativity taught by Hestenes at Arizona State University from 1966 to 1967. He still vividly remembers a feeling of disbelief that the fundamental geometric product of vectors could have been left out of his undergraduate mathematics education. Geometric algebra provides a rich, general mathematical framework for the develop ment of multilinear algebra, projective and affine geometry, calculus on a manifold, the representation of Lie groups and Lie algebras, the use of the horosphere and many other areas. This book is addressed to a broad audience of applied mathematicians, physicists, computer scientists, and engineers.
The aim of this book is to present the theory and applications of the relativistic Boltzmann equation in a self-contained manner, even for those readers who have no familiarity with special and general relativity. Though an attempt is made to present the basic concepts in a complete fashion, the style of presentation is chosen to be appealing to readers who want to understand how kinetic theory is used for explicit calculations. The book will be helpful not only as a textbook for an advanced course on relativistic kinetic theory but also as a reference for physicists, astrophysicists and applied mathematicians who are interested in the theory and applications of the relativistic Boltzmann equation.

Electrochemistry is an old branch of physical chemistry. Due to the development of surface sensitive techniques, and a technological interest in fuel cells and batteries, it has recently undergone a rapid development. This textbook treats the field from a modern, atomistic point of view while integrating the older, macroscopic concepts. The increasing role of theory is reflected in the presentation of the basic ideas in a way that should appeal to experimentalists and theorists alike. Special care is

taken to make the subject comprehensible to scientists from neighboring disciplines, especially from surface science. The book is suitable for an advanced course at the master or Ph.D. level, but should also be useful for practicing electrochemists, as well as to any scientist who wants to understand modern electrochemistry.

Este libro te ayudará a construir los mejores aprendizajes y herramientas para que los apliques dentro y fuera del aula, proporcionándote así una mejor calidad de vida y un excelente desarrollo personal y profesional.

A implementação da proposta do Novo Ensino Médio é um desafio para gestores, professores e estudantes. Novas práticas para o Ensino Médio: Matemática tem o objetivo de auxiliar nesta importante jornada, que exigirá grande capacidade de adaptação. Será necessário construir novas relações de ensino e aprendizagem em que o estudante é o centro do processo, ao mesmo tempo que os componentes curriculares são trabalhados de maneira cada vez mais integrada, por meio de metodologias ativas. O trabalho desenvolvido na obra ocorrerá por meio de atividades e vivências, ora individuais, ora coletivas, com base em suas experiências pessoais no que diz respeito à profissão e ao seu projeto de vida. Esperamos que este trabalho o auxilie a atuar de forma criativa, de acordo com suas possibilidades e com a realidade em que está inserido, neste importante momento em que novos parâmetros são estabelecidos visando construir um Ensino Médio que faça mais sentido para nossas juventudes, que vivem e atuam em uma sociedade mediada pelas tecnologias digitais.

This book brings together issues on pesticides and biopesticides use with the related subjects of pesticides management and sustainable development. It contains 24 chapters organized in three sections. The first book section supplies an overview on the current use of pesticides, on the regulatory status, on the levels of contamination, on the pesticides management options, and on some techniques of pesticides application, reporting data collected from all over the world. Second section is devoted to the advances in the evolving field of biopesticides, providing actual information on the regulation of the plant protection products from natural origin in the European Union. It reports data associated with the application of neem pesticides, wood pyrolysis liquids and bacillus-based products. The third book section covers various aspects of pesticides management practices in concert with pesticides degradation and contaminated sites remediation technologies, supporting the environmental sustainability.

Prezado leitor, prezada leitora: Saudações cordiais! Escrever, em poucas palavras, a respeito de uma obra científica de tamanha magnitude e elevado rigor acadêmico como esta, que ora se torna de domínio público, não é uma tarefa fácil; porém muitíssimo gratificante. Há uma mistura qualiquantitativa de emoções, sentimentos, anseios, expectativas e desafios que se engendram. Todavia, mesmo em meio à crise sanitária que (ainda) tem assolado de forma caótica e preocupante o Brasil e o mundo nos dias atuais, devido ao advento da pandemia de novo Coronavírus (COVID-19), é com imensa alegria e satisfação que, nas condições de organizador e autor, apresentamos o presente livro intitulado Tópicos especiais no ensino e na

aprendizagem de matemática. Este primoroso opúsculo acadêmico--científico, de leitura e utilização recomendável em cursos de graduação (bacharelado, licenciatura e tecnologia), cursos específicos de formação continuada de docentes de Matemática (e disciplinas curriculares afins) e cursos de extensão universitária, bem como na realização de semanas pedagógicas escolares e no desenvolvimento de pesquisas científicas em (Educação) Matemática, está didática e metodologicamente estruturado em quatro belíssimos capítulos teóricos, os quais são resultantes de leituras dirigidas, investigações científicas, experiências escolares e acadêmicas discentes, análises crítico-reflexivas e práticas pedagógicas profissionais docentes de renomados(as) estudiosos(as)/pesquisadores(as) oriundos(as) das áreas de Educação, Pedagogia, Matemática e demais campos correlatos do conhecimento científico. Os(As) autores(as) e coautores(as) deste importante livro, que é um autêntico artefato cultural e legado eterno para todas as demais gerações vindouras, não mediram esforços em redigir os seus capítulos textuais em formato de artigos científicos, cujas temáticas são resumidamente apresentadas na seguinte sequência, sem, tampouco, levar em consideração questões hierárquicas e/ou níveis valorativos de relevância acadêmico--científica e intelectual: Abrindo com chave de ouro a coletânea científica, tem-se o primeiro capítulo nominado de MODELAGEM MATEMÁTICA: UMA ALTERNATIVA PEDAGÓGICA PARA A SOLUÇÃO DE PROBLEMAS REAIS, de autoria de Tayla da Silva Corrêa de Freitas; Gerson dos Santos Farias e Eugenia Brunilda Opazo Uribe. A posteriori, as autoras Viviane Roncaglio; Isabel Koltermann Battisti e Cátia Maria Nehring trazem, no segundo capítulo textual, o artigo científico AULAS DE MECÂNICA GERAL I EM UM CURSO DE ENGENHARIA E A MOBILIZAÇÃO DO CONCEITO VETOR. Na continuidade, TECNOLOGIAS DIGITAIS NO ENSINO DA MATEMÁTICA: O USO DO APP “GOOGLE SALA DE AULA” COMO FACILITADOR DO PROCESSO DE ENSINO-APRENDIZAGEM compõe o terceiro capítulo autoral do livro, cujas reflexões e análises aprofundadas são desenvolvidas pelos pesquisadores Francisco Ronilso Rocha da Silva e Cleidiane de Carvalho Pereira, com ampla rigorosidade metodológico--científica também presente nos demais artigos científicos. Em última instância, compondo o quarto capítulo da obra em foco, o autor-organizador Marcos Pereira dos Santos apresenta o artigo científico intitulado REFLEXÕES SOBRE O PROCESSO ENSINO-APRENDIZAGEM DE MATEMÁTICA BÁSICA NA ESCOLA E EM CURSOS SUPERIORES DE GRADUAÇÃO NO BRASIL CONTEMPORÂNEO, que, de forma verossimilhante aos três temas abordados anteriormente, consiste em uma discussão acadêmica atual e pertinente na pós--modernidade. Sem mais delongas, desejamos com ardor que os artigos científicos compilados nesta obra literária, de valor sociocultural incalculável, possam ser lidos, relidos, trelidos e (re)utilizados de modo abrangente nos dias atuais e em todos os tempos por todos(as) aqueles(as) que fazem uso de conhecimentos e saberes matemáticos na vida pessoal, cotidiana e profissional; bem como, e de modo muito particular, aos(às) que ensinam, aprendem e ensinam-e-aprendem Matemática, no Brasil, nas

escolas de Educação Básica e instituições de Educação Superior em geral. Por ora, é isto o que temos a declarar em breves palavras. Que cada leitor(a) aproveite ao máximo e positivamente as concepções educacionais aqui expostas: eis o que almejamos com total sinceridade! Abraço fraterno!!!

Intended for beginners in ergodic theory, this introductory textbook addresses students as well as researchers in mathematical physics. The main novelty is the systematic treatment of characteristic problems in ergodic theory by a unified method in terms of convergent power series and renormalization group methods, in particular. Basic concepts of ergodicity, like Gibbs states, are developed and applied to, e.g., Asonov systems or KAM Theroy. Many examples illustrate the ideas and, in addition, a substantial number of interesting topics are treated in the form of guided problems.

A horrifying account of the effects of an Allied air raid on a German city during World War Two - a classic of anti-war literature

This inaugural handbook documents the distinctive research field that utilizes history and philosophy in investigation of theoretical, curricular and pedagogical issues in the teaching of science and mathematics. It is contributed to by 130 researchers from 30 countries; it provides a logically structured, fully referenced guide to the ways in which science and mathematics education is, informed by the history and philosophy of these disciplines, as well as by the philosophy of education more generally. The first handbook to cover the field, it lays down a much-needed marker of progress to date and provides a platform for informed and coherent future analysis and research of the subject. The publication comes at a time of heightened worldwide concern over the standard of science and mathematics education, attended by fierce debate over how best to reform curricula and enliven student engagement in the subjects. There is a growing recognition among educators and policy makers that the learning of science must dovetail with learning about science; this handbook is uniquely positioned as a locus for the discussion. The handbook features sections on pedagogical, theoretical, national, and biographical research, setting the literature of each tradition in its historical context. It reminds readers at a crucial juncture that there has been a long and rich tradition of historical and philosophical engagements with science and mathematics teaching, and that lessons can be learnt from these engagements for the resolution of current theoretical, curricular and pedagogical questions that face teachers and administrators. Science educators will be grateful for this unique, encyclopaedic handbook, Gerald Holton, Physics Department, Harvard University This handbook gathers the fruits of over thirty years' research by a growing international and cosmopolitan community Fabio Bevilacqua, Physics Department, University of Pavia

This book opens with an axiomatic description of Euclidean and non-Euclidean geometries. Euclidean geometry is the starting point to understand all other geometries and it is the cornerstone for our basic intuition of vector spaces. The generalization to non-Euclidean geometry is the following step to develop the language of Special and General Relativity. These theories are discussed starting from a full geometric

point of view. Differential geometry is presented in the simplest way and it is applied to describe the physical world. The final result of this construction is deriving the Einstein field equations for gravitation and spacetime dynamics. Possible solutions, and their physical implications are also discussed: the Schwarzschild metric, the relativistic trajectory of planets, the deflection of light, the black holes, the cosmological solutions like de Sitter, Friedmann-Lemaître-Robertson-Walker, and Gödel ones. Some current problems like dark energy are also scketched. The book is self-contained and includes details of all proofs. It provides solutions or tips to solve problems and exercises. It is designed for undergraduate students and for all readers who want a first geometric approach to Special and General Relativity.

"Neutrosophic Computing and Machine Learning" (NCML) has been created for publications of advanced studies in neutrosophy, neutrosophic set, neutrosophic logic, neutrosophic probability, neutrosophic statistics, neutrosophic approaches to machine learning etc. and their applications in any field. "Neutrosophic Computing and Machine Learning" (NCML) ha sido creada para publicaciones de estudios avanzados en neutrosofía, conjunto neutrosófico, lógica neutrosófica, probabilidad neutrosófica, estadística neutrosófica, enfoques neutrosó-ficos para el aprendizaje automático, etc. y sus aplicaciones en cualquier campo. Contributors to current issue (listed in papers' order): Florentín Smarandache, Omar Mar Cornelio, Iván Santana Ching, Jorge Gulín Gonzales, Ricardo González Labrada, Raúl Más Rodés, Jorge Luis Reyes López, Redel Caballero Áreas, Noriel Reynaldo Rodríguez, Jorge Luis Reyes López, Ricardo González Labrada, Yuri Elizabeth Gutiérrez Córdova.

How high can animals jump? What are the fastest thrown balls? How fast can aeroplanes and butterflies fly? What does the sea level tell us about the sun? What are temperature and heat? What is self-organization? This free colour pdf on introductory physics guarantees to be entertaining, surprising and challenging on every page. The text presents the best stories, images, movies and puzzles in mechanics, gravity and thermodynamics - with little mathematics, always starting from observations of everyday life. This first volume also explains conservation laws and the reversibility of motion, explores mirror symmetry, and presents the principle of cosmic laziness: the principle of least action. This popular series has already more than 160 000 readers. If you are between the age of 16 and 106 and want to understand nature, you will enjoy it! To achieve wonder and thrill on every page, the first volume includes the various "colour of the bear" puzzles and the "picture on the wall" puzzle, explains about the many types of water waves, introduces the art of laying rope, tells about the the dangers of aeroplane toilets, explores the jumping height of different animals, presents the surprising motion of moguls on skiing slopes, explains why ultrasound imaging is not safe for a foetus, gives the ideal shape of skateboard half-pipes, estimates the total length of all capillaries in the human body, explains how it is possible to plunge a bare hand into molten lead, includes a film of an oscillating quartz inside a watch, includes the "handcuff puzzle" and the "horse pulling

a rubber with a snail on it" puzzle, explains how jet pilots frighten civilians with sonic superbooms produced by fighter planes, presents the most beautiful and precise sundial available today, shows leap-frogging vortex rings, tells the story of the Galilean satellites of Jupiter, mentions the world records for running backwards and the attempts to break the speed sailing record, and tells in detail how to learn from books with as little effort as possible. Enjoy the reading!

Many of the earliest books, particularly those dating back to the 1900s and before, are now extremely scarce and increasingly expensive. We are republishing these classic works in affordable, high quality, modern editions, using the original text and artwork.

Este livro é destinado, principalmente, a químicos, biólogos, farmacêuticos e bioquímicos, em qualquer nível, que desejam aprender a técnica. Ele introduz os conceitos mais básicos da RMN, o que lhe permitirá trilhar novos caminhos nas diferentes aplicações da técnica. Não se preocupe se você ainda não tem muitos conhecimentos: este livro foi escrito para iniciantes. Um aluno que tenha terminado um bom Ensino Médio tem os fundamentos necessários para a compreensão do que é apresentado aqui. O livro começa apresentando o conceito de espectroscopia, mostrando onde se encaixa a RMN. Os conceitos básicos da técnica são introduzidos pouco a pouco por meio da RMN de hidrogênio e de carbono-13, com explicações sobre o equipamento e como um espectro é gerado. Também são abordados a RMN-2D e o efeito Overhauser nuclear (NOE), que apresenta enorme gama de aplicações na química, na biologia e na farmácia. Convido o leitor a começar a aprender RMN, e tenho certeza de que terá a capacidade e ficará fascinado com o poder dessa técnica. Boa viagem!

A one-sentence definition of operator theory could be: The study of (linear) continuous operations between topological vector spaces, these being in general (but not exclusively) Fréchet, Banach, or Hilbert spaces (or their duals). Operator theory is thus a very wide field, with numerous facets, both applied and theoretical. There are deep connections with complex analysis, functional analysis, mathematical physics, and electrical engineering, to name a few. Fascinating new applications and directions regularly appear, such as operator spaces, free probability, and applications to Clifford analysis. In our choice of the sections, we tried to reflect this diversity. This is a dynamic ongoing project, and more sections are planned, to complete the picture. We hope you enjoy the reading, and profit from this endeavor.

This volume presents a collection of articles highlighting recent developments in commutative algebra and related non--commutative generalizations. It also includes an extensive bibliography and lists a substantial number of open problems that point to future directions of research in the represented subfields. The contributions cover areas in commutative algebra that have flourished in the last few decades and are not yet well represented in book form. Highlighted topics and research methods include Noetherian and non-Noetherian ring theory, module theory and integer-valued polynomials along with connections to algebraic number theory, algebraic geome-

try, topology and homological algebra. Most of the eighteen contributions are authored by attendees of the two conferences in commutative algebra that were held in the summer of 2016: “Recent Advances in Commutative Ring and Module Theory,” Bressanone, Italy; “Conference on Rings and Polynomials” Graz, Austria. There is also a small collection of invited articles authored by experts in the area who could not attend either of the conferences. Following the model of the talks given at these conferences, the volume contains a number of comprehensive survey papers along with related research articles featuring recent results that have not yet been published elsewhere.

As Tecnologias de Informação e Comunicação (TIC s) estão cada vez mais presentes na vida das pessoas, sendo muito utilizadas pelas crianças e jovens. O acesso às informações de cunho geral tem aumentado consideravelmente fora do ambiente escolar. Desse modo, a disciplina de Matemática e seu ensino puramente tradicional não instigam mais essa geração de alunos à aprendizagem. Assim, cabe aos professores a tarefa de repensar suas práticas de ensino. Neste contexto, a tendência metodológica de ensino das TIC s representa uma boa opção para inovar e repaginar o processo de ensino-aprendizagem da Matemática. Pensando em contribuir com essa problemática, este livro tem por objetivo auxiliar os professores dos diferentes níveis de ensino a trazerem para as suas aulas alguns elementos já conhecidos dos estudantes, como aplicativos e redes sociais, para que esses contribuam também no aprendizado dos conteúdos da disciplina de Matemática. O uso dessas novas ferramentas pode motivar os alunos, tornando as aulas mais atrativas e o processo de ensino-aprendizagem mais divertido. Assim, primeiramente, esta obra discorre sobre a tendência metodológica das TIC s. Posteriormente, apresenta uma sequência de aplicativos com o respectivo tutorial de utilização, que foram criteriosamente selecionados por possuírem qualidade didática, visual, interativa e por abordarem diferentes conteúdos matemáticos, que são explorados desde as séries iniciais até o ensino superior. Também se apresenta um passo a passo sobre como fazer uso de algumas redes sociais e da construção de blogs.

This two-volume set LNCS 10924 and 10925 constitute the refereed proceedings of the 5th International Conference on Learning and Collaboration Technologies, LCT 2018, held as part of the 20th International Conference on Human-Computer Interaction, HCII 2018, in Las Vegas, NV, USA in July 2018. The 1171 papers presented at HCII 2018 conferences were carefully reviewed and selected from 4346 submissions. The papers cover the entire field of human-computer interaction, addressing major advances in knowledge and effective use of computers in a variety of applications areas. The papers in this volume are organized in the following topical sections: designing and evaluating systems and applications, technological innovation in education, learning and collaboration, learners, engagement, motification, and skills, games and gamification of learning, technology-enhanced teaching and assessment, computing and engineering education.

Analogue Gravity Phenomenology is a collection of contributions that cover a vast range of areas in

physics, ranging from surface wave propagation in fluids to nonlinear optics. The underlying common aspect of all these topics, and hence the main focus and perspective from which they are explained here, is the attempt to develop analogue models for gravitational systems. The original and main motivation of the field is the verification and study of Hawking radiation from a horizon: the enabling feature is the possibility to generate horizons in the laboratory with a wide range of physical systems that involve a flow of one kind or another. The years around 2010 and onwards witnessed a sudden surge of experimental activity in this expanding field of research. However, building an expertise in analogue gravity requires the researcher to be equipped with a rather broad range of knowledge and interests. The aim of this book is to bring the reader up to date with the latest developments and provide the basic background required in order to appreciate the goals, difficulties, and success stories in the field of analogue gravity. Each chapter of the book treats a different topic explained in detail by the major experts for each specific discipline. The first chapters give an overview of black hole spacetimes and Hawking radiation before moving on to describe the large variety of analogue spacetimes that have been proposed and are currently under investigation. This introductory part is then followed by an in-depth description of what are currently the three most promising analogue spacetime settings, namely surface waves in flowing fluids, acoustic oscillations in Bose-Einstein condensates and electromagnetic waves in nonlinear optics. Both theory and experimental endeavours are explained in detail. The final chapters refer to other aspects of analogue gravity beyond the study of Hawking radiation, such as Lorentz invariance violations and Brownian motion in curved spacetimes, before concluding with a return to the origins of the field and a description of the available observational evidence for horizons in astrophysical black holes.

Just the mention of mathematics is enough to strike fear into the hearts of many, yet without it, the human race couldn't be where it is today. By exploring the subject through its 50 key insights--from the simple (the number one) and the subtle (the invention of zero) to the sophisticated (proving Fermat's last theorem)--this book shows how mathematics has changed the way we look at the world around us.

This book, the first of two volumes, contains over 250 selected exercises in Algebra which have featured as exam questions for the Arithmetic course taught by the authors at the University of Pisa. Each exercise is presented together with one or more solutions, carefully written with consistent language and notation. A distinguishing feature of this book is the fact that each exercise is unique and requires some creative thinking in order to be solved. The themes covered in this volume are: mathematical induction, combinatorics, modular arithmetic, Abelian groups, commutative rings, polynomials, field extensions, finite fields. The book includes a detailed section recalling relevant theory which can be used as a reference for study and revision. A list of preliminary exercises introduces the main techniques to be applied in solving the proposed exam questions. This volume is aimed at first year students in Mathematics and Computer Science.

This new adaptation of Arfken and Weber's best-selling Mathematical Methods for Physicists, Fifth Edition, is the most comprehensive, modern, and accessible text for using mathematics to solve physics problems. Additional explanations and examples make it student-friendly and more adaptable to a course syllabus. KEY FEATURES: This is a more accessible version of Arfken and Weber's blockbuster reference, Mathematical Methods for Physicists, 5th Edition Many more detailed, worked-out examples illustrate how to use and apply mathematical techniques to solve physics problems More frequent and thorough explanations help readers understand, recall, and apply the theory New introductions and review material provide context and extra support for key ideas Many more routine problems reinforce basic concepts and computations

The book provides an introduction to Differential Geometry of Curves and Surfaces. The theory of curves starts with a discussion of possible definitions of the concept of curve, proving in particular the classification of 1-dimensional manifolds. We then present the classical local theory of parametrized plane and space curves (curves in n-dimensional space are discussed in the complementary material): curvature, torsion, Frenet’s formulas and the fundamental theorem of the local theory of curves. Then, after a self-contained presentation of degree theory for continuous self-maps of the circumference, we study the global theory of plane curves, introducing winding and rotation numbers, and proving the Jordan curve theorem for curves of class C2, and Hopf theorem on the rotation number of closed simple curves. The local theory of surfaces begins with a comparison of the concept of parametrized (i.e., immersed) surface with the concept of regular (i.e., embedded) surface. We then develop the basic differential geometry of surfaces in R3: definitions, examples, differentiable maps and functions, tangent vectors (presented both as vectors tangent to curves in the surface and as derivations on germs of differentiable functions; we shall consistently use both approaches in the whole book) and orientation. Next we study the several notions of curvature on a surface, stressing both the geometrical meaning of the objects introduced and the algebraic/analytical methods needed to study them via the Gauss map, up to the proof of Gauss’ Teorema Egregium. Then we introduce vector fields on a surface (flow, first integrals, integral curves) and geodesics (definition, basic properties, geodesic curvature, and, in the complementary material, a full proof of minimizing properties of geodesics and of the Hopf-Rinow theorem for surfaces). Then we shall present a proof of the celebrated Gauss-Bonnet theorem, both in its local and in its global form, using basic properties (fully proved in the complementary material) of triangulations of surfaces. As an application, we shall prove the Poincaré-Hopf theorem on zeroes of vector fields. Finally, the last chapter will be devoted to several important results on the global theory of surfaces, like for instance the characterization of surfaces with constant Gaussian curvature, and the orientability of compact surfaces in R3.

Este livro é uma coletânea de artigos, fruto do trabalho de alunos do Programa de Pós-Graduação em Ensino de Ciências e Matemática, vinculado à

Universidade Federal de Sergipe. As reflexões e experiências apresentadas, nesta obra, integram conhecimentos e discussões evocados nas disciplinas Fundamentos de Currículo e Avaliação Escolar e Tópicos Especiais em Ensino de Matemática, ministradas pelas professoras doutoras Denize da Silva Souza e Maria Batista Lima, as quais integram a organização desta coletânea.