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**An Easy Path to Convex Analysis and Applications** Boris S. Mordukhovich 2013-12-01 Convex optimization has an increasing impact on many areas of mathematics, applied sciences, and practical applications. It is now being taught at many universities and being used by researchers of different fields. As convex analysis is the mathematical I


**A Comprehensive Treatment of q-Calculus** Thomas Ernst 2012-09-08 To date, the theoretical development of q-calculus has rested on a non-uniform basis. Generally, the bulky Gasper-Rahman notation was used, but the published works on q-calculus looked different depending on where and by whom they were written. This confusion of tongues not only complicated the theoretical development but also contributed to q-calculus remaining a neglected mathematical field. This book overcomes these problems by introducing a new and interesting notation for q-calculus based on logarithms. For instance, q-hypergeometric functions are now visually clear and easy to trace back to their hypergeometric parents. With this new notation it is also easy to see the connection between q-hypergeometric functions and the q-gamma function, something that until now has been overlooked. The book covers many topics on q-calculus, including special functions, combinatorics, and q-difference equations. Apart from a thorough review of the historical development of q-calculus, this book also presents the domains of modern physics for which q-calculus is applicable, such as particle physics and supersymmetry, to name just a few.

**Special Functions and Analysis of Differential Equations** Praveen Agarwal 2020-09-08 Differential Equations are very important tools in Mathematical Analysis. They are widely found in mathematics itself and in its applications to statistics, computing, electrical circuit analysis, dynamical systems, economics, biology, and so on. Recently there has been an increasing interest in and widely-extended use of differential equations and systems of fractional order (that is, of arbitrary order) as better models of phenomena in various physics, engineering, automatization, biology and biomedicine, chemistry, earth science, economics, nature, and so on. Now, new unified presentation and extensive development of special functions associated with fractional calculus are necessary tools, being related to the theory of differentiation and integration of arbitrary order (i.e., fractional calculus) and to the fractional order (or multi-order) differential and integral equations. This book provides learners with the opportunity to develop an understanding of advancements of special functions and the skills needed to apply advanced mathematical techniques to solve complex differential equations and Partial Differential Equations (PDEs). Subject matters should be strongly related to special functions involving mathematical analysis and its numerous applications. The main objective of this book is to highlight the importance of fundamental results and techniques of the theory of complex analysis for differential equations and PDEs and emphasizes articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, and engineering, particularly those that stress analytical aspects and novel problems and their solutions. Specific topics include but are not limited to Partial differential equations Least squares on first-order system Sequence and series in functional analysis Special functions related to fractional (non-integer) order control systems and equations Various special functions related to generalized fractional calculus Operational method in fractional calculus Functional analysis and operator theory Mathematical physics Applications of numerical analysis and applied mathematics Computational mathematics Mathematical modeling This book provides the recent developments in special functions and differential equations and publications high-quality, peer-reviewed book chapters in the area of nonlinear analysis, ordinary differential equations, partial differential equations, and related applications.

**Information Technology and Computer Application Engineering** Hsiang-Chuan Liu 2013-10-11 This proceedings volume brings together some 189 peer-reviewed papers presented at the International Conference on Information Technology and Computer Application Engineering, held 27-28 August 2013, in Hong Kong, China. Specific topics under consideration include Control, Robotics, and Automation, Information Technology, Intelligent Computing and

**Convex Functions** Jonathan M. Borwein 2010-01-14 The product of a collaboration of over 15 years, this volume is unique because it focuses on convex functions themselves, rather than on convex analysis. The authors explore the various classes and their characteristics, treating convex functions in both Euclidean and Banach spaces.

**Advances in Mathematical Inequalities and Applications** Praveen Agarwal 2018-12-31 This book is a collection of original research and survey articles on mathematical inequalities and their numerous applications in diverse areas of mathematics and engineering. It includes chapters on convexity and related concepts; inequalities for mean values, sums, functions, operators, functionals, integrals and their applications in various branches of mathematics and related sciences; fractional integral inequalities; and weighted type integral inequalities. It also presents their wide applications in biomathematics, boundary value problems, mechanics, queuing models, scattering, and geomechanics in a concise, but easily understandable way that makes the further ramifications and future directions clear. The broad scope and high quality of the contributions make this book highly attractive for graduates, postgraduates and researchers. All the contributing authors are leading international academics, scientific researchers and scholars.

**Mathematical Inequalities** Pietro Cerone 2010-12-01 Drawing on the authors' research work from the last ten years, Mathematical Inequalities: A Perspective gives readers a different viewpoint of the field. It discusses the importance of various mathematical inequalities in contemporary mathematics and how these inequalities are used in different applications, such as scientific modeling. The authors

**Frontiers in Functional Equations and Analytic Inequalities** George A. Anastassiou 2019-11-23 This volume presents cutting edge research from the frontiers of functional equations and analytic inequalities active fields. It covers the subject of functional equations in a broad sense, including but not limited to the following topics: Hyperstability of a linear functional equation on restricted domains Hyers-Ulam's stability results to a three point boundary value problem of nonlinear fractional order differential equations Topological degree theory and Ulam's stability analysis of a boundary value problem of fractional differential equations General Solution and Hyers-Ulam Stability of Duo Trigintic Functional Equation in Multi-Banach Spaces
Organized into 13 chapters, the book discusses the latest trends at the International Conference on Fractional Differentiation and its Applications (ICFDA), held at the University of Jordan, Amman, Jordan, on 16–18 July 2018. Fractional Differentiation and its Applications (ICFDA) collects papers presented at the International Conference on Fractional Calculus. The book's results can be found in many areas of pure and applied mathematics, especially in ordinary and partial differential equations and fractional differential equations. As such, this volume is suitable for researchers, graduate students and related seminars, and all science and engineering libraries. The exhibited thirty six chapters are self-contained and can be read independently and interesting advanced seminars can be given out of this book.

**New Inequalities Based on Convexity** Mihaly Bencze 2012 In this book I present new inequalities based on convexity. The first chapter is devoted to the Popoviciu's inequality for functions of several variables. The notion of 2D-convex function is introduced, and several results are presented like the 2D analogue of Jensen's inequality, Popoviciu's inequality of Hermite-Hadamard type inequality, the analogue of midpoint convexity, convolution of 2D-convex functions, and the nice proof of the classical Popoviciu's inequality, based on the mathematical induction. In the second chapter I studied in seven sections, the Hilbert-type inequalities, Hardy-Hilbert integral inequality etc. In the third chapter I present in six sections: the Hermite-Hadamard integral inequality, the Simpson-type, Newton-type and Gauß-type inequalities. In the chapter four I discuss the Schur convexity of generalized Heronian means, involving two parameters. Chapter five has nine sections, and studies the Brunn-Minkowski inequality.

**Frontiers in Functional Equations and Analytic Inequalities** George A. Anastassiou 2020-12-29 This volume presents cutting edge research from the frontiers of functional equations and analytic inequalities active fields. It covers the subject of functional equations in a broad sense, including but not limited to the following topics: Hyperstability of a linear functional equation on restricted domains Hyers–Ulam's stability results to a three point boundary value problem of nonlinear fractional order differential equations Topological degree theory and Ulam's stability analysis of a boundary value problem of fractional differential equations General Solution and Hyers-Ulam Stability of Duo Trigintic Functional Equation in Multi-Banach Spaces Stability of Functional Equations via Fixed Point Technique Measure zero stability problem for the Drygas functional equation with complex involution Fourier Transforms and Ulam Stabilities of Linear Differential Equations Hyers–Ulam stability of a discrete diamond–alpha derivative equation Approximate solutions of an interesting new mixed type additive-quadratic-quartic functional equation. The diverse selection of inequalities covered includes Opial, Hilbert-Pachpatte, Ostrowski, comparison of means, Poincare, Sobolev, Landau, Polya-Ostrowski, Hardy, Hermite-Hadamard, Levinson, and complex Korovkin type. The inequalities are also in the environments of Fractional Calculus and Conformable Fractional Calculus. Applications from this book's results can be found in many areas of pure and applied mathematics, especially in ordinary and partial differential equations and fractional differential equations. As such, this volume is suitable for researchers, graduate students and related seminars, and all science and engineering libraries. The exhibited thirty six chapters are self-contained and can be read independently and interesting advanced seminars can be given out of this book.

**Fractional Order Analysis** Hemen Dutta 2020-09-01 A guide to the new research in the field of fractional order analysis Fractional Order Analysis contains the most recent research findings in fractional order analysis and its applications. The authors—note the topic—offer an examination of the theory, methods, applications, the modern and related techniques in the field of fractional order analysis. The information, tools, and applications presented can help develop mathematical methods and models with better accuracy. Comprehensive in scope, the book covers a range of topics including: new fractional operators, fractional derivatives, fractional differential equations, inequalities for different fractional derivatives and fractional integrals, fractional modeling related to transmission of Malaria, and dynamics of Zika virus with various fractional derivatives, and more. Designed to be accessible text, several useful, relevant aspects can be found in various places, which is crucial for an understanding of the research problems of an applied nature. This book: Contains recent development in fractional calculus Offers a balance of theory, methods, and applications Puts the focus on fractional analysis and its interdisciplinary applications, such as fractional models for biological models Helps make research more relevant to real-life applications Written for researchers, professionals and practitioners, Fractional Order Analysis offers a comprehensive resource to fractional analysis and its many applications as well as information on the newest research.

**Approximation Theory and Analytic Inequalities** Themistocles M. Rassias 2021-07-21 This contributed volume focuses on various important areas of mathematics in which approximation methods play an essential role. It features cutting-edge research on a wide spectrum of analytic inequalities with emphasis on differential and integral inequalities in the spirit of functional analysis, operator theory, nonlinear analysis, variational calculus, featuring a plethora of applications, making this work a valuable resource. The reader will be exposed to convexity theory, polynomial inequalities, extremal problems, prediction theory, fixed point theory for operators, PDEs, fractional integral inequalities, multidimensional numerical integration, Gauss-Jacobi and Hermite-Hadamard type inequalities, Hilbert-type inequalities, and Ulam's stability of functional equations. Contributions have been written by eminent researchers, providing up-to-date information and several results which may be useful to a wide readership including graduate students and researchers working in mathematics, physics, economics, operational research, and their interconnections.

**Inequalities** Shigeru Furuichi 2020-01-15 Inequalities appear in various fields of natural science and engineering. Classical inequalities are still being improved and/or generalized by many researchers. That is, inequalities have been completed and developed by mathematicians. In this book, we selected the papers that were published as the Special Issue “Inequalities” in the journal Mathematics (MDPI publisher). They were ordered by similar topics for readers’ convenience and to give new and interesting results in mathematical inequalities, such as the improvements in famous inequalities, the results of Frame theory, the coefficient inequalities of functions, and the kind of convex functions used for Hermite–Hadamard inequalities. The editor believes that the contents of this book will be useful to study the latest results for researchers of this field.

**Fractional Differentiation Inequalities** George A. Anastassiou 2009-05-28 In this book the author presents the Opial, Poincaré, Sobolev, Hilbert, and Ostrowski fractional differentiation inequalities. Results for the above are derived using three different types of fractional derivatives, namely by Canavati, Riemann-Liouville and Caputo. The univariate and multivariate...
cases are both examined. Each chapter is self-contained. The theory is presented systematically along with the applications. The application to information theory is also examined. This monograph is suitable for researchers and graduate students in pure mathematics. Applied mathematicians, engineers, and other applied scientists will also find this book useful.

Computational Mathematics and Variational Analysis Nicholas J. Daras 2020-06-06 This volume presents a broad discussion of computational methods and theories on various classical and modern research problems from pure and applied mathematics. Readers conducting research in mathematics, engineering, physics, and economics will benefit from the diversity of topics covered. Contributions from an international community treat the following subjects: calculus of variations, optimization theory, operations research, game theory, differential equations, functional analysis, partial differential equations, numerical approximation, Szász–Durrmeyer operators and approximation, integral inequalities, behaviour of the solutions of functional equations, functional inequalities in complex Banach spaces, functional contractions in metric spaces.

Differential and Integral Inequalities Dorin Andrica 2019-11-14 Theories, methods and problems in approximation theory and analytic inequalities with a focus on differential and integral inequalities are analyzed in this book. Fundamental and recent developments are presented on the inequalities of Abel, Agarwal, Beckenbach, Bessel, Cauchy–Hadamard, Chebychev, Markov, Euler’s constant, Grothendieck, Hilbert, Hardy, Hadamard, Landau–Kolmogorov, Carlson, Bernstein–Mordell, Gronwall, Wirtinger, as well as inequalities of functions with their integrals and derivatives. Each inequality is discussed with proven results, examples and various applications. Graduate students and advanced research scientists in mathematical analysis will find this reference essential to their understanding of differential and integral inequalities. Engineers, economists, and physicists will find the highly applicable inequalities practical and useful to their research.

Fractional Differential Equations Juan J. Nieto 2019-11-19 Fractional calculus provides the possibility of introducing integrals and derivatives of an arbitrary order in the mathematical modelling of physical processes, and it has become a relevant subject with applications to various fields, such as anomalous diffusion, propagation in different media, and propagation in relation to materials with different properties. However, many aspects from theoretical and practical points of view have still to be developed in relation to models based on fractional operators. This Special Issue is related to new developments on different aspects of fractional differential equations, both from a theoretical point of view and in terms of applications to problems arising from the biological and physical sciences. The book is of interest to readers who wish to learn of new research in such topics as linear and nonlinear analysis, mathematical biology and ecology, dynamical systems, graph theory, variational analysis and inequalities, functional analysis, differential and difference equations, partial differential equations, approximation theory, and chaos. All papers were prepared by participants at the International Conference on Recent Advances in Mathematical Biology, Analysis and Applications (ICMBAA-2015) held during 4–6 June 2015 in Aligarh, India. A focal theme of the conference was the application of mathematics to the biological sciences and on current research in areas of theoretical mathematical analysis that can be used as sophisticated tools for the study of scientific problems. The conference provided researchers, academicians and engineers with a platform that encouraged them to exchange their innovative ideas in mathematical analysis and its applications as well as to form interdisciplinary collaborations. The content of the book is divided into three parts: Part I contains contributions from participants whose topics are related to nonlinear dynamics and its applications in biological sciences. Part II has contributions which concern topics on nonlinear analysis and its applications to a variety of problems in science, engineering and industry. Part III consists of contributions dealing with some problems in applied analysis.

Convex Functions, Partial Orderings, and Statistical Applications Josip E. Pečarić 1992-06-03 This research-level book presents up-to-date information concerning recent developments in convex functions and partial orderings and some applications in mathematics, statistics, and reliability theory. The book will serve researchers in mathematical and statistical theory and theoretical and applied reliabilityists. Presents classical and newly published results on convex functions and related inequalities Explains partial ordering based development and their applications in mathematics, statistics, and reliability Demonstrates the connection of partial ordering with other well-known orderings such as majorization and Schur functions Will generate further research and applications
Applications Sotiris K. Ntouyas 2020-11-09 During the last decade, there has been an increased interest in fractional differential equations, inclusions, and inequalities, as they play a fundamental role in the modeling of numerous phenomena, in particular, in physics, biomathematics, blood flow phenomena, ecology, environmental issues, viscoelasticity, aerodynamics, electrodynamics of complex medium, electrical circuits, electron-analytical chemistry, control theory, etc. This book presents collective works published in the recent Special Issue (SI) entitled "Fractional Differential Equation, Inclusions and Inequalities with Applications" of the journal Mathematics. This Special Issue presents recent developments in the theory of fractional differential equations and inequalities. Topics include but are not limited to the existence and uniqueness results for boundary value problems for different types of fractional differential equations, a functional analytic approach for fractional differential equations, and applications in sciences and engineering.

Dynamic Inequalities On Time Scales Ravi Agarwal 2014-10-30 This is a monograph devoted to recent research and results on dynamic inequalities on time scales. The study of dynamic inequalities on time scales has been covered extensively in the literature in recent years and has now become a major sub-field in pure and applied mathematics. In particular, this book will cover recent results on integral inequalities, including Young's inequality, Jensen's inequality, Hölder's inequality, Minkowski's inequality, Steffensen's inequality, Hermite-Hadamard inequality and Čebyšev's inequality. Opial type inequalities on time scales and their extensions with weighted functions, Lyapunov type inequalities, Halanay type inequalities for dynamic equations on time scales, and Wirtinger type inequalities on time scales and their extensions will also be discussed here in detail.

Fixed Point Theory and Fractional Calculus Pradip Deb Nath Operator Inequalities of Ostrowski and Trapezoidal Type Silvestru Sever Dragomir 2011-12-09 Inequalities of Ostrowski and Trapezoidal Type for Functions of Selfadjoint Operators on Hilbert Spaces presents recent results concerning Ostrowski and Trapezoidal type inequalities for continuous functions of bounded Selfadjoint operators on complex Hilbert spaces. The first chapter recalls some fundamental facts concerning bounded Selfadjoint operators on complex Hilbert spaces. The generalized Schwarz's inequality for positive Selfadjoint operators as well as some results for the spectrum of this class of operators are presented. The author also introduces and explores the fundamental results for polynomials in a linear operator, continuous functions of selfadjoint operators that will play a central role throughout the book. The following chapter is devoted to the Ostrowski's type inequalities, which provide sharp error estimates in approximating the value of a function by its integral mean and can be used to obtain a priori error bounds for different quadrature rules in approximating the Riemann integral by different Riemann sums. The author also presents recent results extending Ostrowski inequality in various directions for continuous functions of selfadjoint operators in complex Hilbert spaces. The final chapter illustrates recent results obtained in extending trapezoidal type inequality in various directions for continuous functions of selfadjoint operators in complex Hilbert spaces. Applications for mid-point inequalities and some elementary functions of operators as also provided. This book is intended for use by researchers in various fields of Linear Operator Theory and Mathematical Inequalities. As well as postgraduate students and scientists applying inequalities in their specific areas.

International Journal of Mathematical Combinatorics, Volume 2, 2019 Linfan Mao International J. Mathematical Combinatorics is a fully refereed international journal. Topics in detail to be covered are: Smarandache multi-spaces with applications to other sciences, such as those of algebraic multisystems, multi-metric spaces; Smarandache geometries; Differential geometry; combinatorial analysis; Topological graphs; Algebraic graphs; Random graphs; Combinatorial maps; Graph and map enumeration; Combinatorial designs; Combinatorial enumeration; Low Dimensional Topology; Differential Topology; Topology of Manifolds; Geometrical aspects of Mathematical Physics and Relations with Manifold Topology; Applications of Smarandache multi-spaces to theoretical physics; Applications of Combinatorics to mathematics and theoretical physics; Mathematical theory on gravitational fields; Mathematical theory on parallel universes; Other applications of Smarandache multi-space and combinatorics.

Differential and Integral Inequalities Dorin Andrica 2020-11-27 Theories, methods and problems in approximation theory and analytic inequalities with a focus on differential and integral inequalities are analyzed in this book. Fundamental and recent developments are presented on the inequalities of Abel, Agarwal, Beckenbach, Bessel, Cauchy-Hadamard, Chebyshev, Markov, Euler's constant, Grothendieck, Hilbert, Hardy, Carleman, Landau-Kolmogorov, Carlson, Bernstein-Mordell, Gronwall, Wirtinger, as well as inequalities of functions with their integrals and derivatives. Each inequality is discussed with proven results, examples, and various applications. Graduate students and advanced research scientists in mathematical analysis will find this reference essential to their understanding of differential and integral inequalities. Engineers, economists, and physicists will find the highly applicable inequalities practical and useful to their work.

Optimization, Variational Analysis and Applications Vivek Laha 2021-07-27 This book includes selected papers presented at the Indo-French Seminar on Optimization, Variational Analysis and Applications (IFSOVAA-2020), held at the Department of Mathematics, Institute of Science, Banaras Hindu University, Varanasi, India, from 2–4 February 2020. The book discusses current optimization problems and their solutions by using the powerful tool of variational analysis. Topics covered in this volume include set optimization, multiobjective optimization, mathematical programs with complementary, equilibrium, vanishing and switching constraints, copositive optimization, interval-valued optimization, sequential quadratic programming, bound-constrained optimization, variational inequalities, and more. Several applications in different branches of applied mathematics, engineering, economics, finance, and medical sciences will also be discussed. Each chapter not only provides a detailed survey of the topic but also builds systematic theories and suitable algorithms to deduce the most recent findings in literature. This volume appeals to graduate students as well as researchers and practitioners in pure and applied mathematics and related fields that make use of variational analysis in solving optimization problems.

Introduction to Interval Analysis Ramon E. Moore 2009 An update on the author’s previous books, this introduction to interval analysis provides an introduction to INTLAB, a high-quality, comprehensive MATLAB toolbox for interval computations, making this the first interval analysis book that does with INTLAB what general numerical analysis texts do with MATLAB.

Quantum Calculus Victor Kac 2012-12-06 Simply put, quantum calculus is ordinary calculus without taking limits. This undergraduate text develops two types of quantum calculi, the q-calculus and the h-calculus. As this book develops quantum calculus along the lines of traditional calculus, the reader discovers, with a remarkable inevitability, many important notions and results of classical mathematics. This book is written at the level of a first course in calculus and linear algebra and is aimed at undergraduate beginning graduate students in mathematics, computer science, and physics. It is based on lectures and seminars given by MIT Professor Kac over the last few years at MIT.

Inequalities and Applications Ravi P. Agarwal 1994 World Scientific Series in Applicable Analysis (WSSIAA) reports new developments of a high mathematical standard and of current interest. Each volume in the series is devoted to mathematical analysis that has been applied, or is potentially applicable to the solution of scientific, engineering, and social problems. The third volume of WSSIAA contains 47 research articles on inequalities by leading mathematicians from all over the world and a tribute by R.M. Redheffer to Wolfgang Walter ? to whom this volume is dedicated ? on his 66th birthday.Contributors: A Acker, J D Azc,J, A Alvino, K A Ames, Y Avishai, C Bandle, B M Brown, R C Brown, D Brydak, P S Bullen, K Deimling, J Diaz, ? Elbert, P W Eloe, L H Erbe, H Esser, M Ess,Jn, W D Evans, W N Everitt, V Ferone, A M

Contributions in Mathematics and Engineering Panos M. Pardalos 2016-10-04 The contributions in this volume aim to deepen understanding of some of the current research problems and theories in mathematics and related areas. Several of the contributions are devoted to integral inequalities, optimization theory, complex analysis, real analysis, differential equations, and geometry. Applications to these areas of mathematics are presented within the broad spectrum of research in engineering science with particular emphasis on equilibrium problems, complexity in numerical optimization, dynamical systems, non-smooth optimization, complex network analysis, statistical models and data mining, and energy systems. Additional emphasis is given to interdisciplinary research, although subjects are treated in a unified and self-contained manner. The presentation of methods, theory and applications makes this tribute an invaluable reference for teachers, researchers, and other professionals interested in pure and applied research, philosophy of mathematics, and mathematics education. Some review papers published in this volume will be particularly useful for a broader audience of readers as well as for graduate students who search for the latest information. Constantin Carathéodory’s wide-ranging influence in the international mathematical community was seen during the first Fields Medals awards at the International Congress of Mathematicians, Oslo, 1936. Two medals were awarded, one to Lars V. Ahlfors, the other to Jesse Douglas. It was Douglas who presented both their works during the opening of the International Congress. This volume contains significant papers in Science and Engineering dedicated to the memory of Constantin Carathéodory and the spirit of his mathematical influence.

Ostrowski Type Inequalities and Applications in Numerical Integration Sever S. Dragomir 2013-03-14 It was noted in the preface of the book "Inequalities Involving Functions and Their Integrals and Derivatives", Kluwer Academic Publishers, 1991, by D.S. Mitrinovic, J.E. Pecaric and A.M. Fink; since the writing of the classical book by Hardy, Littlewood and Polya (1934), the subject of differential and integral inequalities has grown by about 800%. Ten years on, we can confidently assert that this growth will increase even more significantly. Twenty pages of Chapter XV in the above mentioned book are devoted to integral inequalities involving functions with bounded derivatives, or, Ostrowski type inequalities. This is now itself a special domain of the Theory of Inequalities with many powerful results and a large number of applications in Numerical Integration, Probability Theory and Statistics, Information Theory and Integral Operator Theory. The main aim of the present book, jointly written by the members of the Victoria University node of RGMIA (Research Group in Mathematical Inequalities and Applications, http://rgmia.vu.edu.au) and Th. M. Rassias, is to present a selected number of results on Ostrowski type inequalities. Results for univariate and multivariate real functions and their natural applications in the error analysis of numerical quadrature for both simple and multiple integrals as well as for the Riemann-Stieltjes integral are given.

Classical and New Inequalities in Analysis Dragoslav S. Mitrinovic 2013-04-17 This volume presents a comprehensive compendium of classical and new inequalities as well as some recent extensions to well-known ones. Variations of inequalities ascribed to Abel, Jensen, Cauchy, Chebyshev, Hölder, Minkowski, Stefferson, Gram, Fejer, Jackson, Hardy, Littlewood, Polya, Schwarz, Hadamard and a host of others can be found in this volume. The more than 1200 cited references include many from the last ten years which appear in a book for the first time. The 30 chapters are all devoted to inequalities associated with a given classical inequality, or give methods for the derivation of new inequalities. Anyone interested in equalities, from student to professional, will find their favorite inequality and much more.

Analytic Inequalities Dragoslav S. Mitrinovic 2012-12-06 The Theory of Inequalities began its development from the time when C. F. GACC, A. L. CATCHY and P. L. CEBSYEY, to mention only the most important, laid the theoretical foundation for approximative methods. Around the end of the 19th and the beginning of the 20th century, numerous inequalities were proved, some of which became classic, while most remained as isolated and unconnected results. It is almost generally acknowledged that the classic work "Inequalities" by G. H. Hardy, J. E. LITTLEWOOD and G. POLYA, which appeared in 1934, transformed the field of inequalities from a collection of isolated formulas into a systematic discipline. The modern Theory of Inequalities, as well as the continuing and growing interest in this field, undoubtedly stem from this work. The second English edition of this book, published in 1952, was unchanged except for three appendices, totalling 10 pages, added at the end of the book. Today inequalities play a significant role in all fields of mathematics, and they present a very active area of research for mathematicians. D. J. DIEUDONNE, in his book "Acalculusinfinitesimal" (Paris 1968), attributed special significance to inequalities, adopting the method of exposition characterized by "majoer, minorer, approcher". Since 1934 a multitude of papers devoted to inequalities have been published: in some of them new inequalities were discovered, in others classical inequalities were sharpened or extended, various inequalities were linked by finding their common source, while some other papers gave a large number of miscellaneous applications.

Mathematical Analysis and Applications Themistocles M. Rassias 2019-12-12 An international community of experts and scientists comprise the research and survey contributions in this volume which covers a broad spectrum of areas in which analysis plays a central role. Contributions discuss theory and problems in real and complex analysis, functional analysis, approximation theory, operator theory, analytic inequalities, the Radon transform, nonlinear analysis, and various applications of interdisciplinary research; some are also devoted to specific applications such as the three-body problem, finite element analysis in fluid mechanics, algorithms for difference of monotone operators, a vibrational approach to a financial problem, and more. This volume is useful to graduate students and researchers working in mathematics, physics, engineering, and economics.