

Srinivasa Ramanujan Achievements File

Recent authoritative evidence suggests that an estimated 200 million children under five fail to achieve their developmental potential due to factors including poor health and nutrition and the lack of stable high quality care. A significant number of the world's children today lack the basic rights to health, development and protection. In light of such statistics, early childhood services for young children have expanded around the world. The SAGE Handbook of Early Childhood Policy draws critical attention to policy in Early Childhood Education and Care (ECEC) its relationship to service provision and its impact on the lives of children and families. The perspectives of leading academics and researchers from Europe, North America, South America, Africa, Australasia and Asia have been arranged around five key themes: Part 1: The Relationship Between Research, Policy And Practice: Country Case Studies Part 2: Equitable Early Childhood Services: Intervention to Improve Children's Life Chances Part 3: Extending Practice: The Role of Early Childhood Services In Family Support Part 4: Participation, Rights and Diversity Part 5: Future Directions for Early Childhood Policy This handbook is essential reading for practitioners, stakeholders and others committed to working within early years services to achieve an awareness of policy and its implications for services and practice. The First Edition of the book is a collection of articles, all by the author, on the Indian mathematical genius Srinivasa Ramanujan as well as on some of the greatest mathematicians in history whose life and works have things in common with Ramanujan. It presents a unique comparative study of Ramanujan's spectacular discoveries and remarkable life with the monumental contributions of various mathematical luminaries, some of whom, like Ramanujan, overcame great difficulties in life. Also, among the articles are reviews of three important books on Ramanujan's mathematics and life. In addition, some aspects of Ramanujan's contributions, such as his remarkable formulae for the number pi, his path-breaking work in the theory of partitions, and his fundamental observations on quadratic forms, are discussed. Finally, the book describes various current efforts to ensure that the legacy of Ramanujan will be preserved and continue to thrive in the future. This Second Edition is an expanded version of the first with six more articles by the author. Of note is the inclusion of a detailed review of the movie *The Man Who Knew Infinity*, a description of the fundamental work of the SASTRA Ramanujan Prize Winners, and an account of the Royal Society Conference to honour Ramanujan's legacy on the centenary of his election as FRS.

Anand Kumar, a mathematics prodigy, defied all challenges to set up one of the most successful and innovative teaching initiatives in the world—Super 30. Born in Chandipur Bela, Patna, Anand secured a place in Cambridge University but couldn't attend because he had no money and sold papads in the evenings instead. He dealt with his own disappointment by setting up an innovative school in 2002 to prepare underprivileged students for the IIT JEE examination. Super 30 has an astonishing success rate and on an average, twenty-seven to twenty-eight of the thirty students crack the exam every year. Stirring and heart-wrenching, this is the extraordinary story of a visionary who has elevated these bright sparks and, through education, given them hope to rise above crippling poverty.

String theory says we live in a ten-dimensional universe, but that only four are accessible to our everyday senses. According to theorists, the missing six are curled up in bizarre structures known as Calabi-Yau manifolds. In *The Shape of Inner Space*, Shing-Tung Yau, the man who mathematically proved that these manifolds exist, argues that not only is geometry fundamental to string theory, it is also fundamental to the very nature of our universe. Time and again, where Yau has gone, physics has followed. Now for the first time, readers will follow Yau's penetrating thinking on where we've been, and where mathematics will take us next. A fascinating exploration of a world we are only just beginning to grasp, *The Shape of Inner Space* will change the way we consider the universe on both its grandest and smallest scales.

Expander graphs are an important tool in theoretical computer science, geometric group theory, probability, and number theory. Furthermore, the techniques used to rigorously establish the expansion property of a graph draw from such diverse areas of mathematics as representation theory, algebraic geometry, and arithmetic combinatorics. This text focuses on the latter topic in the important case of Cayley graphs on finite groups of Lie type, developing tools such as Kazhdan's property (T), quasirandomness, product estimates, escape from subvarieties, and the Balog-Szemerédi-Gowers lemma. Applications to the affine sieve of Bourgain, Gamburd, and Sarnak are also given. The material is largely self-contained, with additional sections on the general theory of expanders, spectral theory, Lie theory, and the Lang-Weil bound, as well as numerous exercises and other optional material.

Tantrasangraha, composed by the renowned Kerala astronomer N?lakantha Somay?j? (c.1444-1545 AD) ranks along with ?ryabhat?ya of ?ryabhata and Siddh?nta?iromani of Bh?skar?c?rya as one of the major works which significantly influenced further work on astronomy in India. One of the distinguishing features is the introduction of a major revision of the traditional Indian planetary model. N?lakantha arrived at a unified theory of planetary latitudes and a better formulation of the equation of centre for the interior planets (Mercury and Venus) than was previously available. In preparing the translation and explanatory notes, K. Ramasubramanian and M. S. Sriram have used authentic Sanskrit editions of Tantrasangraha by Surand Kunjan Pillai and K V Sarma. All verses have been translated into English, which have been supplemented with detailed explanations including all necessary mathematical relations, illustrative examples, figures and tables using modern mathematical notation.

An introduction to computational complexity theory, its connections and interactions with mathematics, and its central role in the natural and social sciences, technology, and philosophy *Mathematics and Computation* provides a broad, conceptual overview of computational complexity theory—the mathematical study of efficient computation. With important practical applications to computer science and industry, computational complexity theory has evolved into a highly interdisciplinary field, with strong links to most mathematical areas and to a growing number of scientific endeavors. Avi Wigderson takes a sweeping survey of complexity theory, emphasizing the field's insights and challenges. He explains the ideas and motivations leading to key models, notions, and results. In particular, he looks at algorithms and complexity, computations and proofs, randomness and interaction, quantum and arithmetic computation, and cryptography and learning, all as parts of a cohesive whole with numerous cross-influences. Wigderson illustrates the immense breadth of the field, its beauty and richness, and its diverse and growing interactions with other areas of mathematics. He ends with a comprehensive look at the theory of computation, its methodology and aspirations, and the unique and fundamental ways in which it has shaped and will further shape science, technology, and society. For further reading, an extensive bibliography is provided for all topics covered. *Mathematics and Computation* is useful for undergraduate and graduate students in mathematics, computer science, and related fields, as well as researchers and teachers in these fields. Many parts require little background, and serve as an invitation to newcomers seeking an introduction to the theory of computation. Comprehensive coverage of computational complexity theory, and beyond High-level, intuitive exposition, which brings conceptual clarity to this central and dynamic scientific discipline Historical accounts of the evolution and motivations of central concepts and models A broad view of the theory of computation's influence on science, technology, and society Extensive bibliography

*The Man Who Knew Infinity*A Life of the Genius RamanujanSimon and Schuster

"Our understanding of how the human brain performs mathematical calculations is far from complete. In *The Number*

Sense, Stanislas Dehaene offers readers an enlightening exploration of the mathematical mind. Using research showing that human infants have a rudimentary number sense, Dehaene suggests that this sense is as basic as our perception of color, and that it is wired into the brain. But how then did we leap from this basic number ability to trigonometry, calculus, and beyond? Dehaene shows that it was the invention of symbolic systems of numerals that started us on the climb to higher mathematics. Tracing the history of numbers, we learn that in early times, people indicated numbers by pointing to part of their bodies, and how Roman numerals were replaced by modern numbers. On the way, we also discover many fascinating facts: for example, because Chinese names for numbers are short, Chinese people can remember up to nine or ten digits at a time, while English-speaking people can only remember seven. A fascinating look at the crossroads where numbers and neurons intersect, *The Number Sense* offers an intriguing tour of how the structure of the brain shapes our mathematical abilities, and how math can open up a window on the human mind"--Provided by publisher. Based on the remarkable true story of G. H. Hardy and Srinivasa Ramanujan, and populated with such luminaries such as D. H. Lawrence, Bertrand Russell, and Ludwig Wittgenstein, *The Indian Clerk* takes this extraordinary slice of history and transforms it into an emotional and spellbinding story about the fragility of human connection and our need to find order in the world. A literary masterpiece, it appeared on four bestseller lists, including the Los Angeles Times, and received dazzling reviews from every major publication in the country.

This undergraduate textbook promotes an active transition to higher mathematics. Problem solving is the heart and soul of this book: each problem is carefully chosen to demonstrate, elucidate, or extend a concept. More than 300 exercises engage the reader in extensive arguments and creative approaches, while exploring connections between fundamental mathematical topics. Divided into four parts, this book begins with a playful exploration of the building blocks of mathematics, such as definitions, axioms, and proofs. A study of the fundamental concepts of logic, sets, and functions follows, before focus turns to methods of proof. Having covered the core of a transition course, the author goes on to present a selection of advanced topics that offer opportunities for extension or further study. Throughout, appendices touch on historical perspectives, current trends, and open questions, showing mathematics as a vibrant and dynamic human enterprise. This second edition has been reorganized to better reflect the layout and curriculum of standard transition courses. It also features recent developments and improved appendices. *An Invitation to Abstract Mathematics* is ideal for those seeking a challenging and engaging transition to advanced mathematics, and will appeal to both undergraduates majoring in mathematics, as well as non-math majors interested in exploring higher-level concepts. From reviews of the first edition: Bajnok's new book truly invites students to enjoy the beauty, power, and challenge of abstract mathematics. ... The book can be used as a text for traditional transition or structure courses ... but since Bajnok invites all students, not just mathematics majors, to enjoy the subject, he assumes very little background knowledge. Jill Dietz, MAA Reviews The style of writing is careful, but joyously enthusiastic.... The author's clear attitude is that mathematics consists of problem solving, and that writing a proof falls into this category. Students of mathematics are, therefore, engaged in problem solving, and should be given problems to solve, rather than problems to imitate. The author attributes this approach to his Hungarian background ... and encourages students to embrace the challenge in the same way an athlete engages in vigorous practice. John Perry, zBMATH

Zeta and q-Zeta Functions and Associated Series and Integrals is a thoroughly revised, enlarged and updated version of *Series Associated with the Zeta and Related Functions*. Many of the chapters and sections of the book have been significantly modified or rewritten, and a new chapter on the theory and applications of the basic (or q-) extensions of various special functions is included. This book will be invaluable because it covers not only detailed and systematic presentations of the theory and applications of the various methods and techniques used in dealing with many different classes of series and integrals associated with the Zeta and related functions, but stimulating historical accounts of a large number of problems and well-classified tables of series and integrals. Detailed and systematic presentations of the theory and applications of the various methods and techniques used in dealing with many different classes of series and integrals associated with the Zeta and related functions

A biography of the Indian mathematician Srinivasa Ramanujan. The book gives a detailed account of his upbringing in India, his mathematical achievements, and his mathematical collaboration with English mathematician G. H. Hardy. The book also reviews the life of Hardy and the academic culture of Cambridge University during the early twentieth century. Originally published in 1927, this book presents the collected papers of the renowned Indian mathematician Srinivasa Ramanujan (1887-1920), with editorial contributions from G. H. Hardy (1877-1947). Detailed notes are incorporated throughout and appendices are also included. This book will be of value to anyone with an interest in the works of Ramanujan and the history of mathematics.

Avul Pakir Jainulabdeen Abdul Kalam, The Son Of A Little-Educated Boat-Owner In Rameswaram, Tamil Nadu, Had An Unparalleled Career As A Defence Scientist, Culminating In The Highest Civilian Award Of India, The Bharat Ratna. As Chief Of The Country'S Defence Research And Development Programme, Kalam Demonstrated The Great Potential For Dynamism And Innovation That Existed In Seemingly Moribund Research Establishments. This Is The Story Of Kalam'S Rise From Obscurity And His Personal And Professional Struggles, As Well As The Story Of Agni, Prithvi, Akash, Trishul And Nag--Missiles That Have Become Household Names In India And That Have Raised The Nation To The Level Of A Missile Power Of International Reckoning.

The second edition of this book updates and expands upon a historically important collection of mathematical problems first published in the United States by Birkhäuser in 1981. These problems serve as a record of the informal discussions held by a group of mathematicians at the Scottish Café in Lwów, Poland, between the two world wars. Many of them were leaders in the development of such areas as functional and real analysis, group theory, measure and set theory, probability, and topology. Finding solutions to the problems they proposed has been ongoing since World War II, with

prizes offered in many cases to those who are successful. In the 35 years since the first edition published, several more problems have been fully or partially solved, but even today many still remain unsolved and several prizes remain unclaimed. In view of this, the editor has gathered new and updated commentaries on the original 193 problems. Some problems are solved for the first time in this edition. Included again in full are transcripts of lectures given by Stanislaw Ulam, Mark Kac, Antoni Zygmund, Paul Erdős, and Andrzej Granas that provide amazing insights into the mathematical environment of Lwów before World War II and the development of The Scottish Book. Also new in this edition are a brief history of the University of Wrocław's New Scottish Book, created to revive the tradition of the original, and some selected problems from it. The Scottish Book offers a unique opportunity to communicate with the people and ideas of a time and place that had an enormous influence on the development of mathematics and try their hand on the unsolved problems. Anyone in the general mathematical community with an interest in the history of modern mathematics will find this to be an insightful and fascinating read.

"This book is a search for 'the real Anandibai Joshee' ---- a search in which the readers are invited to participate." In her short and eventful life, Anandibai Joshee, the first Indian woman to earn a medical degree, broke many stereotypes. Literate at a time when it was taboo for a girl to attend school or even 'pick up a paper', she was courageous, articulate, and assertive. And ambitious. Fuelled by a desire to improve the healthcare that was available to Indian women at that time, she travelled across the seas to the United States to study medicine. Meera Kosambi's biography of Anandibai is more than just a retelling of the life of a woman who was ahead of her times. Drawing on a host of narratives, Kosambi recovers Anandibai's many voices, which have been submerged in history -- that of a conflicted feminist, a nationalist, and a reformer, among others -- and her engagement with the world at large. This volume is a testament to Meera Kosambi's commitment to social history. When she passed away in 2015, she left an incomplete manuscript that has painstakingly been put together by the editors. Drawing on archival research, including a host of Anandibai's letters, her poems in Marathi, newspaper reports, and rare photographs, this book will be of immense interest to scholars and researchers of modern Indian history, sociology, gender, and South Asian studies.

This text provides a simple account of classical number theory, as well as some of the historical background in which the subject evolved. It is intended for use in a one-semester, undergraduate number theory course taken primarily by mathematics majors and students preparing to be secondary school teachers. Although the text was written with this readership in mind, very few formal prerequisites are required. Much of the text can be read by students with a sound background in high school mathematics.

New and classical results in computational complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.

In 1150 AD, Bhaskaracarya (b. 1114 AD), renowned mathematician and astronomer of Vedic tradition composed Lilavati as the first part of his larger work called Siddhanta Siromani, a comprehensive exposition of arithmetic, algebra, geometry, mensuration, number theory and related topics. Lilavati has been used as a standard textbook for about 800 years. This lucid, scholarly and literary presentation has been translated into several languages of the world. Bhaskaracarya himself never gave any derivations of his formulae. N.H. Phadke (1902-1973) worked hard to construct proofs of several mathematical methods and formulae given in original Lilavati. The present work is an enlargement of his Marathi work and attempts a thorough mathematical explanation of definitions, formulae, short cuts and methodology as intended by Bhaskara. Stitches are followed by literal translations so that the reader can enjoy and appreciate the beauty of accurate and musical presentation in Lilavati. The book is useful to school going children, sophomores, teachers, scholars, historians and those working for cause of mathematics.

Martin Gardner's Mathematical Games columns in Scientific American inspired and entertained several generations of mathematicians and scientists. Gardner in his crystal-clear prose illuminated corners of mathematics, especially recreational mathematics, that most people had no idea existed. His playful spirit and inquisitive nature invite the reader into an exploration of beautiful mathematical ideas along with him. These columns were both a revelation and a gift when he wrote them; no one--before Gardner--had written about mathematics like this. They continue to be a marvel. This is the original 1988 edition and contains columns published from 1974-1976.

The letters that Ramanujan wrote to G. H. Hardy on January 16 and February 27, 1913, are two of the most famous letters in the history of mathematics. These and other letters introduced Ramanujan and his remarkable theorems to the world and stimulated much research, especially in the 1920s and 1930s. This book brings together many letters to, from, and about Ramanujan. The letters came from the National Archives in Delhi, the Archives in the State of Tamil Nadu, and a variety of other sources. Helping to orient the reader is the extensive commentary, both mathematical and cultural, by Berndt and Rankin; in particular, they discuss in detail the history, up to the present day, of each mathematical result in the letters. Containing many letters that have never been published before, this book will appeal to those interested in Ramanujan's mathematics as well as those wanting to learn more about the personal side of his life. Ramanujan: Letters and Commentary was selected for the CHOICE list of Outstanding Academic Books for 1996.

"The son of a prominent Japanese mathematician who came to the United States after World War II, Ken Ono was raised on a diet of high expectations and little praise. Rebelling against his pressure-cooker of a life, Ken determined to drop out of high school to follow his own path. To obtain his father's approval, he invoked the biography of the famous Indian mathematical prodigy Srinivasa Ramanujan, whom his father revered, who had twice flunked out of college because of his single-minded devotion to mathematics. Ono describes his rocky path through college and graduate school, interweaving Ramanujan's story with his own and telling how at key moments, he was inspired by Ramanujan and guided by mentors who encouraged him to pursue his interest in exploring Ramanujan's mathematical legacy. Picking up where others left off, beginning with the great English mathematician G.H. Hardy, who brought Ramanujan to Cambridge in 1914, Ono has devoted his mathematical career to understanding how in his short life, Ramanujan was able to discover so many deep mathematical truths, which Ramanujan believed had been sent to him as visions from a Hindu goddess. And it was Ramanujan who was ultimately the source of reconciliation between Ono and his parents. Ono's search for Ramanujan ranges over three continents and crosses paths with mathematicians whose lives span the globe and the entire twentieth century and beyond. Along the way, Ken made many fascinating discoveries. The most important and surprising one of all was his own humanity."

During the years 1903-1914, Ramanujan recorded many of his mathematical discoveries in notebooks without providing proofs. Although many of his results were already in the literature, more were not. Almost a decade after Ramanujan's death in 1920, G.N. Watson and B.M. Wilson began to edit his notebooks but never completed the task. A photostat edition, with no editing, was published by the Tata Institute of Fundamental Research in Bombay in 1957. This book is the second of four volumes devoted to the editing of Ramanujan's Notebooks. Part I, published in 1985, contains an account of Chapters 1-9 in the second notebook as well as a description of Ramanujan's quarterly reports. In

