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# Ramanujan's Lost Notebook: Part I (Pt. 1)

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Ramanujan's Lost Notebook

Part I





## Synopsis

In the library at Trinity College, Cambridge in 1976, George Andrews of Pennsylvania State University discovered a sheaf of pages in the handwriting of Srinivasa Ramanujan. Soon designated as "Ramanujanâ <sup>TM</sup>s Lost Notebook," it contains considerable material on mock theta functions and undoubtedly dates from the last year of Ramanujanâ <sup>TM</sup>s life. In this book, the notebook is presented with additional material and expert commentary.

#### **Book Information**

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### **Customer Reviews**

From the reviews: "The â ^lost notebookâ ™ was in fact a 138-page manuscript found in materials from the estate of G.N. Watson. The manuscript, written in â ^Ramanujanâ ™s distinctive handwritingâ ™, contained over 600 formulas. The authors have taken these results, provided proofs, placed them in the context of contemporary mathematics, and organized them accordingly â | This book is for the true fans of ... Ramanujan (Ramanuphiles?). If you enjoyed the original Ramanujanâ ™s Notebook series, then itâ ™s hard to pass this up." (Donald L. Vestal, MathDL-online, October 2006) "The present work is the first of an estimated four volumes devoted to all of the claims made by Ramanujan â |. The mathematics community owes a huge debt of gratitude to Andrews and Berndt for undertaking the monumental task of producing a coherent presentation along with complete proofs of the â | mathematical thoughts of Ramanujan during the last year of his life. â | Practitioners of q-series and other mathematicians interested in the work of Ramanujan, will delight in studying this book â | ." (Andrew V. Sills, Mathematical Reviews, Issue

This volume is the first of approximately four volumes devoted to providing statements, proofs, and discussions of all the claims made by Srinivasa Ramanujan in his lost notebook and all his other manuscripts and letters published with the lost notebook. In addition to the lost notebook, this publication contains copies of unpublished manuscripts in the Oxford library, in particular, his famous unpublished manuscript on the partition and tau-functions; fragments of both published and unpublished papers; miscellaneous sheets; and Ramanujan's letters to G. H. Hardy, written from nursing homes during Ramanujan's final two years in England. This volume contains accounts of 442 entries (counting multiplicities) made by Ramanujan in the aforementioned publication. The present authors have organized these claims into eighteen chapters, containing anywhere from two entries in Chapter 13 to sixty-one entries in Chapter 17. Most of the results contained in Ramanujan's Lost Notebook fall under the purview of q-series. These include mock theta functions, theta functions, partial theta function expansions, false theta functions, identities connected with the Rogers-Fine identity, several results in the theory of partitions, Eisenstein series, modular equations, the Rogers-Ramanujan continued fraction, other q-continued fractions, asymptotic expansions of q-series and q-continued fractions, integrals of theta functions, integrals of q-products, and incomplete elliptic integrals. Other continued fractions, other integrals, infinite series identities, Dirichlet series, approximations, arithmetic functions, numerical calculations, diophantine equations, and elementary mathematics are some of the further topics examined by Ramanujan in his lost notebook.

Ramanujan is the greatest mathematician ever and this book is both a challenge and a great source of Ramanujan's mathematical contribution to mathematics.

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