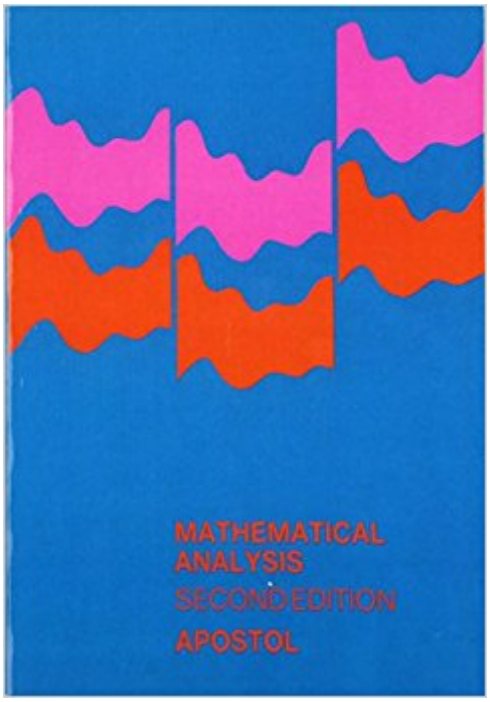
Mathematical Analysis, Second Edition



Synopsis

It provides a transition from elementary calculus to advanced courses in real and complex function theory and introduces the reader to some of the abstract thinking that pervades modern analysis.

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Customer Reviews

It provides a transition from elementary calculus to advanced courses in real and complex function theory and introduces the reader to some of the abstract thinking that pervades modern analysis.

I’m writing this review from the perspective of a undergraduate student who has never been exposed to analysis and not as a seasoned mathematician looking back.From what I understand the treatment of calculus at the undergraduate level has changed significantly in the last few decades with the emphasis being more towards an intuitive understanding of the underlying theory and a heavy emphasis in crunching out calculation quickly and accurately (the ideal treatment of calculus for engineers and applied scientist). The concepts of limits and sets in particular is given only the lightest of treatments. This approach leaves a pretty huge abstract leap for anyone approaching analysis for the first time. Apostol’s book provides the perfect bridge from that type of calculus to the fundamental concepts of analysis.For this reason Mathematical Analysis is one of my favorite books, period! I came across this book while struggling to get through my first course in introductory analysis and I have to say it saved my life! Some people criticizes the author for "spoon feeding" the concepts to the reader, but when you have never had any exposure to analysis before

a little spoon feeding goes a long way. Even now as I'm working my way through upper division and first year graduate courses in statistics, this book is still my favorite reference!Apostol's treatment of basic topology as an extension of set theory is particularly good! Once you have a clear understanding of limits as they relate to topology then you'll finally "get" the whole delta-epsilon arguments from calculus.As an introductory text to the world of mathematical analysis I don't think this book can be beat. Rosenlicht is a little too terse and Rubin is a little too abstract for a beginner. Dont' get me wrong. Rubin is amazing, but if you do not have a solid familiarity with the basic concepts of sets and their relationship to limits, Rubin's book is going to be out of reach for the beginner. First tackle Apostol then move on to Rubin!

While thumbing through analysis books in a local college library, looking for a proof or justification of the method of Lagrange multipliers, I fortuitously stumbled on this baby. Abraham, Marsden, and Ratiu were breezing through this method without justification-just an exercise left to the reader. I found the proof in a chapter of Apostol's book on applications of partial differentiation. It follows from the implicit and/or inverse function theorems-more challenging than the elegant AMR examples-but comprehensible and rigorous now via Apostol. This was the 1st edition but judging from the other reviews of the 2nd edition the content is pretty much the same.Apostol's approach is more like the method of classical analysis rather than Rudin's formal metric topological approach. Apostol doesn't even define an abstract metric, just sticks to the usual Euclidean. He mentions topology on one page. He doesn't do formal measure theory nor full Lebesgue integration but only enough to justify certain integrals or operations. Stokes' Theorem is done in 3 dimensions via Green's Theorem, the classical approach. Notions of orientability and boundary are not presented here as in Rudin's approach via differential forms. Nevertheless with careful reading they can be deduced.What can be learned here? Pretty much most of Rudin's techniques in their classical setting as well as many examples done which are given as exercises in Rudin. For example Apostol constructs a countable base a couple chapters in by assigning rational coordinates to the centers of open ball neighborhoods and rational radii. He doesn't call it a countable base. This notion appears in Rudin's exercises 22 through 25 in chapter 2 where countable dense subsets are discussed (separability) leading to a proof that a metric space is compact if and only if every infinite sequence has a limit point. There are hard to find things like the Lagrange multipliers. Of course Apostol does not have Dedekind's Construction of the reals from the rationals to which the reader is referred to Rudin (by Apostol). If you don't have Rudin get this. It's worth having both if you can.

This book goes deeper in the Analysis world. It is a reference book for studying Real Analysis, just the way the calculus book is. The language, explanations and examples fulfill your expectations when you want to study at a higher level way.

This is a very old reference intended for discussing issues that arise in calculus at the "advanced" level, when we must start to consider some of the elements of rigor involved in making proofs that are satisfactory. An elementary calculus treatment intended as a non-rigorous introduction to calculus, can really be quite excellent, and supply one with many of the intuitive pictures that are helpful for a general audience. But from such a broad introduction, the thoughtful person comes away with many puzzles and unanswered questions, part of which requires both rigor and technical extension of the elementary results. Prof. Apostol’s work develops detailed proofs that often extend these elementary results to more modern analysis. It is definitely a stepping stone in advancement. There is a balance that one must achieve in mathematics between detail and the big picture. Prof. Apostol has definitely focused more on detail, but he does supply us with some perspectives and points of view of the larger picture, and what is involved in making proofs and strategies for formulating theorems and proofs. I think, however, if you are interested in mathematical elegance, you will not encounter much of that in the forest of details in this book. The book does, I believe, a very good job of boosting one’s skill level in math from the introductory calculus level to a more rigorous perspective. Due to the emphasis on detail, I would not recommend this book for self-study. This is unfortunate, because as pedagogy changes and math evolves, one suspects that this book will be used less and less in classes. It is excellent, but it also shows its age.

of America Textbooks) Handbook of Mathematical Functions: with Formulas, Graphs, and Mathematical Tables (Dover Books on Mathematics) Lecture Notes on Mathematical Olympiad Courses: For Junior Section Vol 1 (Mathematical Olympiad Series) Mathematical Apocrypha: Stories and Anecdotes of Mathematicians and the Mathematical (Spectrum) Simple Mathematical Models of Gene Regulatory Dynamics (Lecture Notes on Mathematical Modelling in the Life Sciences) Mathematical Problems from Combustion Theory (Applied Mathematical Sciences) (v. 83) Analytics: Business Intelligence, Algorithms and Statistical Analysis (Predictive Analytics, Data Visualization, Data Analytics, Business Analytics, Decision Analysis, Big Data, Statistical Analysis) Analytics: Data Science, Data Analysis and Predictive Analytics for Business (Algorithms, Business Intelligence, Statistical Analysis, Decision Analysis, Business Analytics, Data Mining, Big Data) IEC 60812 Ed. 2.0 b:2006, Second Edition: Analysis techniques for system reliability - Procedure for failure mode and effects analysis (FMEA) Introductory Mathematical Analysis for Business, Economics, and the Life and Social Sciences (13th Edition) Introductory Mathematical Analysis for Business, Economics and the Life and Social Sciences (12th Edition)