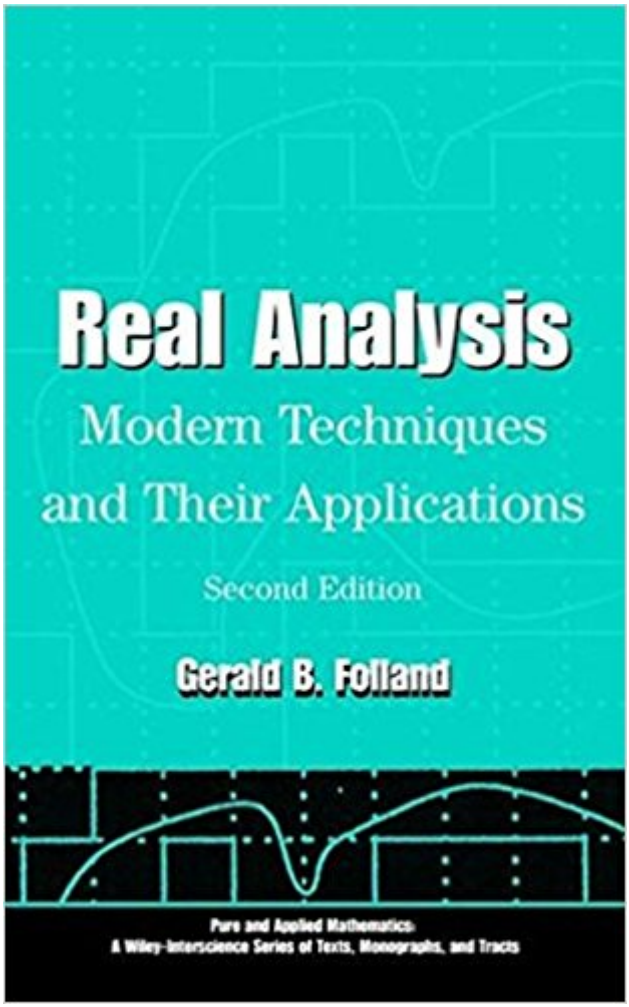
Real Analysis: Modern Techniques And Their Applications



Synopsis

An in-depth look at real analysis and its applications-now expanded and revised. This new edition of the widely used analysis book continues to cover real analysis in greater detail and at a more advanced level than most books on the subject. Encompassing several subjects that underlie much of modern analysis, the book focuses on measure and integration theory, point set topology, and the basics of functional analysis. It illustrates the use of the general theories and introduces readers to other branches of analysis such as Fourier analysis, distribution theory, and probability theory. This edition is bolstered in content as well as in scope-extending its usefulness to students outside of pure analysis as well as those interested in dynamical systems. The numerous exercises, extensive bibliography, and review chapter on sets and metric spaces make Real Analysis: Modern Techniques and Their Applications, Second Edition invaluable for students in graduate-level analysis courses. New features include: * Revised material on the n-dimensional Lebesgue integral. * An improved proof of Tychonoff's theorem. * Expanded material on Fourier analysis. * A newly written chapter devoted to distributions and differential equations. * Updated material on Hausdorff dimension and fractal dimension.

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Customer Reviews

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While trying to review and strengthen my foundations in measure theory and integration, I found this book.It is tough reading to be sure, but it is easier to work through than Papa Rudin, and feels more "up to date" than Rudin.I like Folland because he does not waste undue time developing the basics of measures. He sprints right through those (Chapters 1,2, and 3) and into Point-Set Topology in Chapter 4. I really enjoyed that chapter, since he goes into the applications to analysis (mostly locally compact Hausdorff spaces) pretty thoroughly. To compare with Royden (3rd edition), you have to wait until 2/3 of the way through to get to this point. By Chapter 5, you are ready for Functional Analysis, which is what I am teaching myself now. (I chickened out of Functional Analysis in grad school, and this has bothered me ever since!)I will have to edit this review once I have gone through the rest of the book. Unlike 3rd edition Royden (I haven't seen the 4th edition, so I can't comment on that), by the time you finish Folland it appears that you will be ready for research in various branches of math that depend heavily on analysis.Therefore, I would have to highly recommend this book. Just consult a more "basic" reference for your first look at measure theory. Jump into this book for a broader view of things.

The Folland book is, by far, my favorite book on the subject. The exposition is extremely clean and concise (perhaps "dense" would be a better word). The text requires a little bit of work on the

reader’s part (some small gaps to fill), aside from the exercises (which is a good thing, in my opinion, for a text at the graduate level). It contains a very hefty amount of mathematics, as it functions as an introduction to Measure Theory/Integration, Topology, Functional Analysis, and Fourier Analysis.Comparing with other books:Rudin’s "Real and Complex Analysis" isn’t quite as comprehensive, regarding real variable theory. Also, the exercises in Rudin aren’t quite as gentle.The Royden, Wheeden/Zygmund, Stein/Shakarchi, and Kolmogorov/Fomin books are far less substantial, as texts and references.I recommend the Folland book, though the Rudin book is good to have. Also, Donald Cohn’s "Measure Theory" makes a great supplementary text, along with the Folland book. If not Folland, then try Cohn.EDIT: 12/04/2015There are many other great books on "Real Variables." Let’s face it: A one-year course in Real Variables, using this text, may cover only half of the book, leaving out much of the supplementary material on Harmonic Analysis/PDE’s; and if a course does have time for some of the supplementary material, it might be preferable to go in a different direction (depending on the audience). For instance, the supplementary topics in Cohn’s book include Polish spaces (and some of the beginnings of descriptive set theory), as well as the Bochner integral (none of which is included in Folland’s text [for the exception of an exercise on vector-valued integration]). If you look at Halmos’ Measure Theory or at the 3rd Edition of Royden, you’ll find some very important and technical aspects of mappings between measure spaces which aren’t in Folland’s text. In Volume I of Dunford & Schwartz, you’ll find the theory for finitely additive set functions, in general, as well as discussions of function spaces and spaces of measures (as Banach spaces).

Very dense; good as a reference text. Problems are very hard since they often borrow ideas from other areas and aren’t too similar to the actual text. This make sit interesting but quite challenging. Many problems are dedicated to finding counterexamples/demonstrating how the lack of assumptions breaks a theorem. I like it, but it’s very difficult to go through when learning for the first time.

Math grad student here. I’m familiar with several of Folland’s books, and I’ve studied out of other introductions to analysis and measure theory (Rudin, Stein, Cohn, Richardson, Protter/Morrey, hope I’m not forgetting something :). Folland’s other books range from more applied to more abstract and more advanced works; therefore, he could have easily written many different kinds of introductions to analysis, but he probably crafted this one to meet the needs of many different kinds of students. The subtitle of the book, "Modern Techniques and Their Applications," is apt. This is a great book

for applied-area students who want to be strong in terms of their understanding of the ins and outs of analysis, and well prepared for more advanced topics related to pde and operator theory. It’s also a great book for budding pure mathematicians, as Folland, who studied under Stein at Princeton, is a specialist with considerable knowledge of his subject.No book is perfect. The first few chapters are often described as dense, and at times it seems like Folland is in a hurry to get through measure theory and on to other things (but really, who isn’t? :). Next to its peers, however, this is a really fine, beautifully done work. I’ve never met him personally, but I’ve always gotten the sense from reading him that Folland has a genuine desire to "save us trouble" and "show us what’s really going on." I’ve been grateful to him many times along the way. I went through real analysis a few years ago, and it’s still one of my desktop references.

I am taking measure theory and this is the required text. I was surprised by how conversational the author is at times, as most analysis books I have read were VERY dry. I consider myself on the geometry, topology, knot theory side of math, but I do not mind reading this book at all. I would definitely suggest this text for anyone who is going to see measure theory for the first time. As a reference for those who are already well versed in the subject, I cannot say how it stacks up to Rudin (as I have not read Rudin), but it helped me.Nick

Analysis (Chemical Analysis: A Series of Monographs on Analytical Chemistry and Its Applications) Applied Functional Analysis: Main Principles and Their Applications (Applied Mathematical Sciences) Hidden Secrets To Curing Your Chronic Disease: Real Science, Real Solutions and Real Stories of Healing and Hope Real-Time Systems: Design Principles for Distributed Embedded Applications (Real-Time Systems Series) The Book on Investing In Real Estate with No (and Low) Money Down: Real Life Strategies for Investing in Real Estate Using Other People's Money A Guide to MAKING IT in Real Estate: A SUCCESS GUIDE for real estate lenders, real estate agents and those who would like to learn about the professions. Infinite Real Estate ROI: The "Silver Bullet" Method of Real Estate Investing to Control Over $10 Million Worth of Real Estate With No Ca$h, No Credit and No Partners Florida Real Estate Law and Practice Explained (All Florida School of Real Estate - Florida Real Estate Mastery) (Volume 1) Real Analysis: Measure Theory, Integration, and Hilbert Spaces (Princeton Lectures in Analysis) (Bk. 3) Analytics: Business Intelligence, Algorithms and Statistical Analysis (Predictive Analytics, Data Visualization, Data Analytics, Business Analytics, Decision Analysis, Big Data, Statistical Analysis)