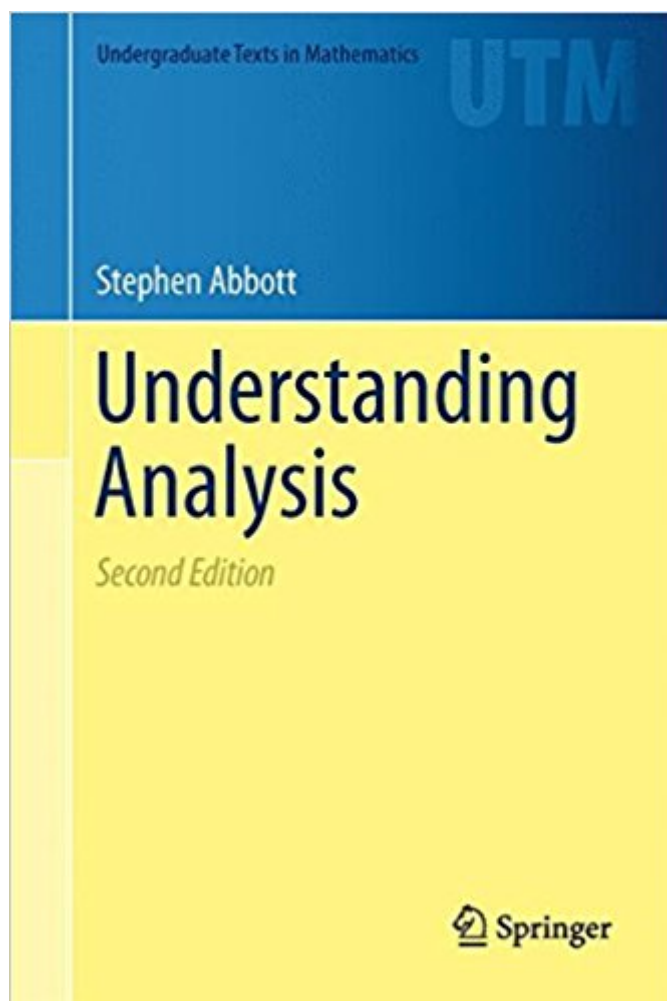




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# Understanding Analysis (Undergraduate Texts In Mathematics)



## Synopsis

This lively introductory text exposes the student to the rewards of a rigorous study of functions of a real variable. In each chapter, informal discussions of questions that give analysis its inherent fascination are followed by precise, but not overly formal, developments of the techniques needed to make sense of  $\mathbb{R}$  and  $\mathbb{C}$ . By focusing on the unifying themes of approximation and the resolution of paradoxes that arise in the transition from the finite to the infinite, the text turns what could be a daunting cascade of definitions and theorems into a coherent and engaging progression of ideas. Acutely aware of the need for rigor, the student is much better prepared to understand what constitutes a proper mathematical proof and how to write one. Fifteen years of classroom experience with the first edition of *Understanding Analysis* have solidified and refined the central narrative of the second edition. Roughly 150 new exercises join a selection of the best exercises from the first edition, and three more project-style sections have been added. Investigations of Euler's constant, the computation of  $\zeta(2)$ , the Weierstrass Approximation Theorem, and the gamma function are now among the book's cohort of seminal results serving as motivation and payoff for the beginning student to master the methods of analysis.

## Book Information

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## Customer Reviews

"The choice of topics is a happy combination of the essential and the interesting, all truly leading to an understanding of what analysis is and what questions it addresses, aided by the

author's extraordinarily lucid exposition. Summing Up: Highly recommended. Upper-division undergraduates. (D. Robbins, Choice, Vol. 53 (2), October, 2015) "This is the second edition of a text for an undergraduate course in single-variable real analysis. The topics covered in this book are the ones that have, by now, become standard for a one-semester undergraduate real analysis course. Overall, this book represents, to my mind, the gold standard among single-variable undergraduate analysis texts. (Mark Hunacek, MAA Reviews, June, 2015) "This is a dangerous book. Understanding Analysis is so well-written and the development of the theory so well-motivated that exposing students to it could well lead them to expect such excellence in all their textbooks. Understanding Analysis is perfectly titled; if your students read it, that's what's going to happen. This terrific book will become the text of choice for the single-variable introductory analysis course; take a look at it next time you're preparing that class. (Steve Kennedy, MAA Reviews) "Each chapter begins with a discussion section and ends with an epilogue. The discussion serves to motivate the content of the chapter while the epilogue points tantalisingly to more advanced topics. I wish I had written this book! The development of the subject follows the tried-and-true path, but the presentation is engaging and challenging. Abbott focuses attention immediately on the topics which make analysis fascinating and makes them accessible to an inexperienced audience. (Scott Sciffer, The Australian Mathematical Society Gazette)

By far the best introductory analysis book, and one of the best introductory math books around. One of the few math texts books that is so well written it is easy for even a non-math major to learn and study from, while also being rigorous and concise.

Best mathematics textbook I've ever seen. Each chapter begins with an interesting example, then proceeds to give you the knowledge you need to fully understand the example. Friendly yet fully rigorous explanations.

Really stunning. Some sections are as fun to read as a novel. In learning analysis, I read this book to understand the big concepts and the motivation for the theorems, and then I flip through Rudin to look for details this book might not cover. At that point the intricacies in Rudin make so much more

sense.

Great book that will challenge you!

I am taking an introductory course in Analysis building up to Analysis I in the fall and II a year from now. So far, I am beyond impressed with how this book handles series and sequences. The author takes the time to provide a more geometric interpretation to the definition of sequence convergence that isn't found in other books. I am not sure what most universities use for their two semester Analysis sequence, but I can say that, if you use Fitzpatrick's "Advanced Calculus", this book is the perfect companion. I seriously helped me pull my head out of my rear end and start doing better in class. Bottom line is that I highly recommend this book to anyone in need of a different viewpoint on material that can be difficult to digest.

Great reference for learning Analysis. Abbott is a good communicator and his presentation and selection of meaningful examples sets this book apart from other Analysis books.

We've used this as a textbook for over a decade for first-semester real analysis, targeted at an audience that includes math majors, minors, and math/econ concentrators. It's maybe the only textbook I've ever used for any math course that the students say they like on course evaluations. It's readable and approachable. It's not as intense as quite a few other "classics", and when you skim it, you get the sense that maybe it's missing some key idea, but then when you dig into it, that idea is actually there, at least at an introductory level. The old edition was probably a little light on good HW problems -- we routinely added some -- but the new edition has made substantial revisions to the problems, so that quite possibly further supplementation would not be needed. If you're looking for the most advanced introduction to real analysis, this is probably not the book for you. If you want a book that students can actually understand, I think this is the one.

This book has a very clear writing style, and the exercises are illustrative of the concepts discussed. I also like that the author grounds the math in a historical context-- it makes the material richer for the reader. I have looked a lot of analysis books, and this is among the best. Another I really like is The Way of Analysis. I think these two are some of the best for understanding the material.

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