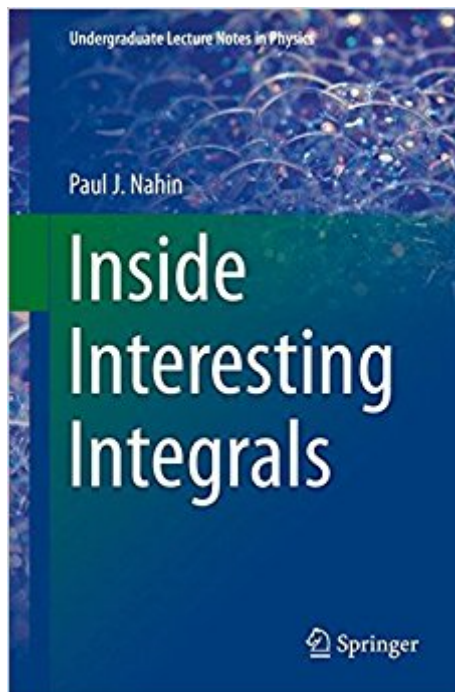# Inside Interesting Integrals: A Collection Of Sneaky Tricks, Sly Substitutions, And Numerous Other Stupendously Clever, Awesomely Wicked, And ... (Undergraduate Lecture Notes In Physics)

Synopsis

Whatâ ™s the point of calculating definite integrals since you canâ ™t possibly do them all?.What makes doing the specific integrals in this book of value arenâ ™t the specific answers weâ ™ll obtain, but rather the methods weâ ™ll use in obtaining those answers; methods you can use for evaluating the integrals you will encounter in the future.This book is written in a light-hearted manner for students who have completed the first year of college or high school AP calculus and have just a bit of exposure to the concept of a differential equation. Every result is fully derived. If you are fascinated by definite integrals, then this is a book for you.

Book Information

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Customer Reviews

This book is very unusual. It reads like a novel but every engineer and researcher should consider having it at arm's reach. The coverage of integrals is not that of a mathematician but that of a person calculating in the trenches. Rigor is not the focus but wide coverage and great utility is. Riemann and Lebesgue integrals are both defined, but the latter is quickly dismissed as not being important to his readers.Nahin treats almost all of the areas of science and engineering where integrals arise. The book can easily be used a reference by jumping in at a topic one needs to work on now. In a short time the reader is able to be functional in an analysis at hand. Every step of each method is shown. There are Challenge Problems at the end of every chapter with solutions in the back of the book.Mathematical niceties such as convergence, singularities, and interchange of integration order are noted but set aside until the end of each method. Then numerical check cases

are calculated in Matlab to determine if there has been a problem along the way. The reader can of use Mathematica or Wolfram Alpha if that is suitable.This book is not littered with gratuitous pictures of mathematicians with a brief caption. Instead there are copious references that discuss how early practitioners solved an integral and comparisons of different approaches. The contributions of GH Hardy and Richard Feynman occur throughout the book.Knowledge of complex arithmetic and basic calculus are assumed at the beginning. At the next to last chapter Contour Integration is covered with a theoretical introduction.

The book is wonderful in its depth and variety of proof techniques. It is also a plus that the proofs are step-by-step exercises in achieving the results. It is a genuine blend of the application and the art of problem solving coupled with historical perspective.

Nahin's book on integrals is certainly not the only book aimed for undergraduates and devoted to integration. It is, however, unique in its down-to-earth, applied treatment of integration. Other texts of comparable levels of mathematical sophistication tend to be oriented towards transitioning students from the rote, mechanical treatment of calculus problems to the deeper understanding acquired in courses on real analysis. For this reason, they invariably spend a fair amount of time on topics like measure theory, the Lebesgue integral, rigor (both in presentation and exercises), and similar content that greatly benefits the undergraduate majoring in mathematics but is of little or no use to engineers, computer scientists, and others who intend to go on to more applied fields. Nor his Nahin's book simply a more thorough treatment of methods to find antiderivatives, of numerical integration, or in general the kind of extended nature of most books on integration that are intended for non-mathematics majors.Instead, it is an exquisitely idiosyncratic presentation of integration that provides a both deeper understanding while remaining thoroughly applied in orientation and a way, or set of ways, to problem-solving that is not at all an extension of methods learned in typical calculus courses. In short, it provides a look inside integrals- as promised.

I really love this book. It shows you all kinds of cool techniques to solve difficult integrals. Until now there hadn't been many books like this. Maybe Victor Moll's Irresistible integrals was one that I like. Victor Moll is also coming out with a collection of papers where he solves from integrals from gradshteyn and ryzhik. That also is nice. I think with more integration techniques being taught we can make the normal calculus curriculum to not just ponder over mediocre results. It's nice that pure calculus as a research field is still alive. My only gripe about the book is that it seems to be typeset

in Mathtype rather than latex. Some of the derivations show too much detail. You can say do this substitution and you arrive at this formula. I like that the style is not abstract math but more down to earth calculations like a physicist might do. It would have been nice to see some things done using mathematica, because Maple is not that great. I definitely encourage you to buy this book there are not many like it.

I created and teach a class in Fourier Theory for an industrial firm. As one knows, the topic requires a substantial amount of integration. Integration is fun. Each integral is a puzzle. Well Nahin created a whole new level of fun. The techniques for solving integrals are rarely taught. Once you begin reading and working the problems, the reader learns new ways of solving many fascinating integral forms. As you move along, the author builds and builds again on techniques he taught in a earlier chapter to take you down another " Yellow Brick Road". This book is meant for people that enjoy integral calculus - Enjoy.

Paul Nahin's book compares itself to the book Irresistible Integrals, but I actually believe it to be the better book. The other book is too textbooky; it assumes the reader has access to Maple or Mathematica or something similar, and focuses on global formulas with few specifics. Dr. Nahin's book focuses more on the kinds of problems that I think of when I think about Integration: what clever method or substitution can I use to solve this Integral, and then what other problems might it work on? Even if you have taught integration for many years, you will certainly come across some clever approaches in this book that you haven't seen before. Many of them give you that warm "Oh, how clever!" feeling that a well solved integral should give you. And the problems are accessible to relatively challenging, without being overwhelming. And, Dr. Nahin includes detailed solutions if you get stuck. Really this is a winner, my favorite of all of the book Dr. Nahin has written.

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