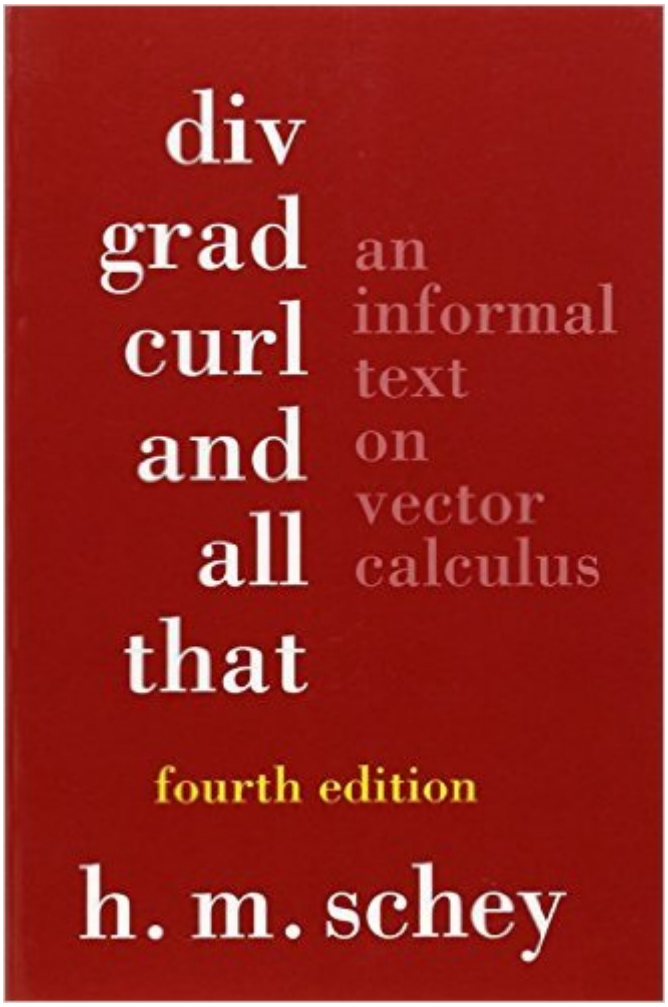
Div, Grad, Curl, And All That: An Informal Text On Vector Calculus (Fourth Edition)



Synopsis

This new fourth edition of the acclaimed and bestselling Div, Grad, Curl, and All That has been carefully revised and now includes updated notations and seven new example exercises. Since the publication of the First Edition over thirty years ago, Div, Grad, Curl, and All That has been widely renowned for its clear and concise coverage of vector calculus, helping science and engineering students gain a thorough understanding of gradient, curl, and Laplacian operators without required knowledge of advanced mathematics.

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Customer Reviews

I picked this book up, based on the reviews that said it would explain vector calculus to "engineers". I probably read the book 3 times, but I never felt I really _understood_ the material. A few years later, I think I do understand the material; looking at the book, many of the things I read seem obvious now. I feel this is where most of the reviewers were coming from...The book is great if you already know the material, and just need a nice, unifying refresher. It is not that great for learning it the first time, since there is very little application of the material, and for me that is what motivates me to understand something. Morse & Feshbach is much more rigorous and dense, but that is where it first "clicked" for me. Also, I think this book is supposed to be in tandem with a more standard Calculus reference. Between two books one might have a better time at figuring things out.There are a few very good figures in the book that have helped me understand some key concepts (the flowchart relating the different operators and their associated assumptions), but the

lack of rigor and general long-windedness of the book could actually be considered a fault, rather than a benefit "for engineers".Also, buy the cheapest edition of this book you can find. They are all basically the same (only the problems and very minor wording change between editions). Don’t think you need to get the latest edition, get a cheaper earlier edition.

I had three years of higher-level calculus between my BS and MS in mechanical engineering, and none of these classes have explained the concepts in this book with such clarity and accessibility. The sample problems at the end of each chapter cement the concepts just learned. For me, they were just challenging enough to test and hone my skills, but not so crazy that I felt like I was stroking some intellectual ego instead of learning practical concepts.I highly recommend it to people of similar backgrounds as myself--people with already decent math backgrounds, but who need to hone their vector calculus skills to enter the world of physics, electrical engineering, fluid mechanics, continuum mechanics, or anything else along those lines (lines! Hah! Pun!). I feel like this book was written just for me! Are there really that many of us?One tip on this book--get serious with it, and you will really cement your skills. Do the problems, for real--work them out with pencil and paper; don’t just skim them while you watch TV. They are, as I’ve said, challenging enough to be rewarding, but none are the type that would send you sobbing to your prof in office hours. Suck it up, fix yourself a nice cup of tea, get your dog to sit with you, and go for it! It’s well worth the effort.

Recently an acquaintance of mine asked me for help on passing her advanced calculus course. I was delighted to hear that Schey’s book was one of her references. Because the book was not the main text (nor could it ever be in my opinion), she had not been reading it, so I urged her to do so. After a couple of hours of reading she was back on track.As many reviewers relay, the book is a great companion book to vector calculus. If a reader hasn’t at all with vector calculus the reader will not benefit much from the book. However readers with even the faintest acquaintance to the subject matter and having difficulties understanding will appreciate it enormously. For it is exactly such audience the book addresses (the title of the book also alludes to this fact -- how would one know what "div grad curl and all that" mean without hearing those terms from elsewhere?). The book serves as a nice step back from the usually hurried vector calculus courses. It allows you to revisit the very fundamentals (for e.g. defining div, grad, and curl via limits instead of from differential operators), and relates the topics in a highly readable manner.As mentioned earlier, the book by itself cannot be a text on its own, primarily due to its limited scope of coverage. For instance there are no mentioning of exterior forms, or neither inverse nor implicit function theorems. Many

advanced students will not need this book either. However if you find yourself uncertain in recalling how to compute surface integrals, or you are having difficulties understanding Stoke's theorem and/or Gauss' divergence theorem, this is a good place to build your foundations.

The math world and the physics world are not consistent with one another in their naming conventions for the angles in spherical coordinates (which angle is theta and which is phi). (see the 3rd paragraph on this page [...])The third edition of this book follows the physics convention, but the fourth edition switches to the math convention. This reduces the helpfulness and ability to use the book as a "quick reference" for a physics class, because one must remember to switch all of the variables any time spherical coordinates are used. This is so annoying that I am probably going to sell my copy of the fourth edition and buy the third edition.If you are using this book for a reference for a physics class, I would highly recommend purchasing the third edition (or earlier) unless you enjoy being really confused and creating extra, unnecessary work for yourself.

Calculus, Multi-Term Courses