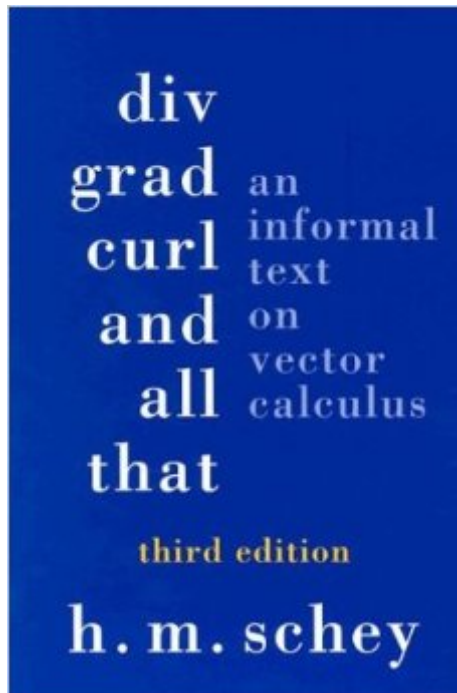


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# DIV, Grad, Curl, And All That: An Informal Text On Vector Calculus



## Synopsis

1997: by H. M. Schey- Informal text on vector calculus. Paperback cover is bright and shiny; crease along spine; binding is tight; text is clean; page edges are sharp; owner's name on inside.

## Book Information

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Best Sellers Rank: #507,009 in Books (See Top 100 in Books) #40 in [Books > Science & Math > Mathematics > Applied > Vector Analysis](#) #488 in [Books > Textbooks > Science & Mathematics > Astronomy & Astrophysics](#) #735 in [Books > Science & Math > Astronomy & Space Science > Astrophysics & Space Science](#)

## Customer Reviews

If you are an undergraduate engineering or science major, then you need to get a copy of this old classic and become good friends with it. If you are a graduate student or a professional in some branch of engineering or science, and you have not already read this book, then sneak out and get a copy before anybody finds out. (You can pretend that you really knew this stuff all along.)

Seriously, this book should be considered Math 101 for scientists and engineers. You simply cannot get by without knowing the basics of vector calculus, curvilinear coordinates, Gauss' law, Stokes' theorem, and of course, the protagonists Divergence, Gradient, and Curl, known to their friends as Div, Grad, and Curl. This is about as tame a book on vector calculus as you could ever hope to meet, which is part of the reason it's been so popular for so long. It's very easy to read (as far as math texts go), it has many simple but effective illustrations, it has ample exercises (most of which have solutions in the back), and it avoids excessive formalism, instead focusing on the nuts-and-bolts of vector calculus as it most commonly arises in electrostatics, for example. Math majors will not be so enamored of this book, simply because of its heuristic approach (hence the word "informal" in the subtitle) and its close ties with applications, which it uses as motivation.

Moreover, Schey does not develop differential forms or exterior calculus, which logically subsume

and extend the material in this book (at the expense of far greater abstraction, which the majority of engineering and science students will prefer to avoid or at least delay). Instructors, if you teach electrostatics or fluid dynamics, you may wish to consider having this as a supplementary text for your students.

It's been over two decades since I first studied vector calculus from my old textbook on electromagnetic fields and waves (Lorrain and Corson, Freeman, 1970). I really enjoyed that class, and remain fascinated by the beautiful mathematics involved in the classical field equations of electromagnetism. When I saw Schey's book on the shelf in Boulder, Co., I immediately picked it up and flipped through the pages. This wasn't the book I'd set out to find (I wanted a good book on Photonics, to commemorate the conference I was attending at NIST on fiber-optic measurements) but I decided it would be fun to read it as a refresher course. My first impression of Schey's book is that it would make a great first course in vector calculus. In fact, I recommend it for that purpose. It will also be very useful for the student enrolled in a class on vector calculus, who wants a secondary reference text to help expand concepts. Schey's approach will appeal to physicists and engineers, with its intuitive, visual style. Schey uses electric fields as the motivating challenge for developing equations that use the divergence, gradient, and curl, and he uses chapter 1 to develop virtually all the physical concepts needed to follow the derivations. For prerequisites, you should have at least one semester of calculus, and it will help to have a little understanding about electromagnetism, as well (a high school level will be more than adequate for this purpose). Schey's book also makes a great refresher text (that's why I bought it). If you've had vector calculus in college, you'll be able to read this book in a week or so.

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