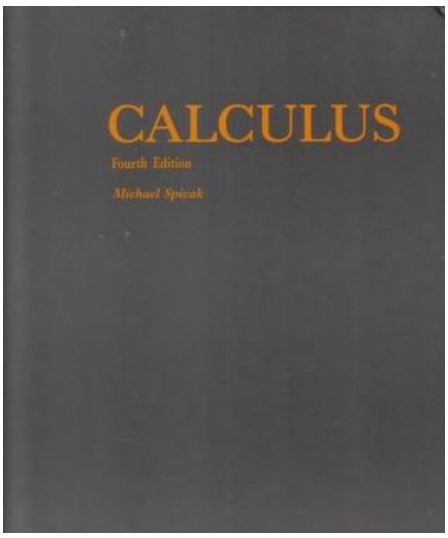


# Calculus

*Michael Spivak*

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**Calculus** Michael Spivak
This edition differs from the third mainly in the inclusion of additional problems, as well as a complete update of the Suggested Reading, together with some changes of exposition, mainly in Chapters 5 and 20.

## Calculus Details

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| Date | : | Published 2008 (first published 1967) |
| ISBN | : | 9780914098911 |
| Author | : | Michael Spivak |
| Format | : | Hardcover 680 pages |
| Genre | : | Science, Mathematics, Nonfiction, Textbooks, Reference, Calculus |

# From Reader Review Calculus for online ebook

### Alex says

A solid text and reference on the topic. Were I to want to re-learn calculus, I'd start here.

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### Ayush Bhat says

Love his VERY detailed treatment to the topic of Infinite Series.

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### Dmitri says

Not really sure why so many people rate this book so highly. Apart from the gratuitous waste of page real estate there is also some confusing notation as well as an overall feel that is a lot more academic than practical.

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### Gavin Rebeiro says

I think the following needs to be said for someone who has never had any experience with calculus and wants to read this book:

1) If you are thinking of reading this book because you are attracted to its "pure" approach, learn some logic. Seriously, just get your head around what deductions are and what the principle of mathematical induction is. I recommend a Fitch-style natural deductive system. Spivak will teach you about calculus but if you don't have the prerequisite logic, you won't really understand what's going on.

2) Applications are important; just as important as rigour. Calculus was the product of many hard years of trying to make progress on problems concerning finding tangents and areas to curves, and trying to mathematically analyse bodies in motion. A lot of mathematics was developed this way, so understanding the motivation is of ultimate importance. Don't get lost in the proofs and forget about the many amazing, practical problems calculus helps us solve. Supplement Spivak's book with some applied problems.

3) Spivak only teaches one type of calculus/analysis. The epsilon-delta approach to analysis is what you will find in this book. Infinitesimals should not be omitted entirely from mathematical education. It is how the calculus was developed and is a great tool for intuitively understanding lots of problems. There is a modern framework for infinitesimals called non-standard analysis. Check it out if you are interested.

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### Phoenix says

Simply the best of its kind. Single variable differential and integral calculus, presented with rigor and style.

Many calculus texts motivate the study of the material with physics problems. Spivak does not, although he does point out the applications. Rather, the development of the calculus here proceeds from mathematical considerations. Because of this, the book is certain to be useful to mathematics students--those approaching calculus for the first time, or those who wish to gain deeper insight into the mathematical bases for differentiation and integration. Much of this material is usually not encountered until (likely more advanced) courses in real analysis. A book like this may be less valuable to majors in fields besides math, such as engineers, or any who need an emphasis on physical interpretations and applications.

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### Gal Barkai says

This is the book that turned me from an aspiring engineer to an aspiring Mathematician. It is well structured, clear and precises, it made me love the subject because for the first time I saw it presented for the logical wonder it is, and as an assortment of formulas to be used. Not to mention the generous margins for scribbling (a homage to Diophantus and Fermat perhaps) practically beg the reader to try his hand in proving the theorems and exercises stated in it.

I was extremely lucky to spot a used version of this book (in nearly mint condition no less!) sitting under a "for sale" sign at our university's library. Only after picking it up I figured why my Math professors said math is a beautiful and logical subject, I really can't stress how much this book changed my perspective.

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### Ilya Zarembsky says

Beautiful and merciless

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### Richard says

Textbook for Mathematics 150, first-year at University of Toronto.
This is THE definitive textbook for Calculus.

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### Samuel says

Incredibly thorough and well written.

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### Abhi Varma says

Many have said it before me, and allow me to say it again: this is **the** Calculus book. Yes, it really does start you off with (a + b) + c = a + (b + c), and then takes you through a nice variety of topics on a breathtaking journey through epsilon-delta proofs, axiomatic deductions and then inductions, the irrationality of pi, the transcendental nature of e, all sorts of sequences and series, and of course--the main 'body' of calculus that is the practice of integration and differentiation. It holds your hand at the sidewalk, and then casts you into the

traffic while crossing the road. It is the very paragon of both coldly beautiful terseness and the warmth that accompanies a clear stream of thought moving rationally from one idea to another. It is conversational, yet sufficiently rigorous; it is formidable in scope yet it travels in steps. But each step is a leap--and don't be surprised if you find yourself poring over a paragraph for hours, before the full meaning sinks in. It is Hemingway wedded with Mathematics--the grand iceberg of thought that is analysis lends weight and a grace of movement to the crystal clear tip of Calculus as it glides through the waters of mathematical thought...

As is visible, I quite love this book. It was my first (real) (no pun intended) introduction to Calculus, and oh was it worth it. I must warn you: this isn't for the pregnant and faint-hearted. Or engineers. But seriously--if you're looking for practical application or pragmatic knowledge then this book isn't exactly for you. If you like--or think you might like--the mathematician's ever-refining pursuit for rigour, for watertight argument, for abstract thought--then you'll love this book. Many say it is second or third year level. I feel, for a serious mathematician, it is first-year level at best, though a reasonably bright and motivated high school student can easily get through the chapters, if not solve the exercises to utmost completion.

Be prepared to use your brain, though. I have to make this disclaimer because sadly, in today's day and age, it is almost too much to ask of someone. It seems to have become almost unfashionable, an unnecessary expenditure of effort. But if you are looking to learn mathematics--in this case, calculus--then get your ass over this book and start engaging the grey matter. It's rewarding.

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### Jose Moa says

For me the best introduction to calculus in one variable, yet absolutely rigurous it is more focussed in explain fundamental concepts in deep that in long full of calculations demostrations;also has some touchs of subtle humour ,some uncommon in a textbook and a lot of remarkable exercises.

Has a lot of explainig clear graphics,give examples of bizarre functions for clearing concepts,give a original introduction to complex variable by convergent complex power series,makes a formal costruction of the real numbers field, and make at this level unusual excursions in more advanced results as the demostration of the irracionality of pi or the demostration of the trancendence of e.

Is a pure mathematics text and has no mention of physical or tecnological use

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### Guillermo Macbeth says

Brillante. De todos los libros disponibles sobre cálculo, éste es uno de los mejores. A favor tiene el enfoque matemático que no desestima las aplicaciones ingenieriles, pero prioriza la teoría formal pura. Eso está muy bien porque las matemáticas son teorías de formas puras en las que cada concepto está saturado de teoría. Los mundos matemáticos son densísimos, pero esto no obliga a que los libros de matemáticas sean barrocos. Además, los mundos matemáticos están llenos de vacíos misteriosos que toman la forma de posibles teoremas, de intuiciones de propiedades axiomáticas que todavía no se han demostrado. Si hay convergencias entre estos mundos formales y el mundo humano es más sorprendente que necesario, como lo sugirió Bertrand Russell en su Autobiografía. Este libro posee todos estos felices atributos, incluyendo la

dificultad de los ejercicios que propone. Señala propiedades muy difíciles de demostrar, lo cual es parte de la idiosincrasia de los buenos libros de matemáticas. Precisión, intensidad, belleza y saludables fugas hacia lo desconocido.

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### Simon Mcleish says

This review first appeared on my blog here.

Calculus was the very first textbook I read for my university degree. As well as being a fine description of the basics of analysis (mostly real, with a toe in the deep water of complex functions), it is an excelent book to ease the transition from mathematics as taught at school level to the rigours of university mathematics.

Unlike many writers of textbooks in mathematics, Spivak makes a big effort to give more than a dry exposition: theorem - proof - next theorem etc. Considerable attention is paid to motivating the discussion, showing why each result is important (though mainly in the pure mathematics context, applications of calculus being mainly found in the problems at the end of each chapter). Of especial use to the budding mathematician are the points where Spivak discusses potential proof strategies for the theorems, often explaining the pitfalls that student taking a naive approach could fall into. There are even occasional jokes, both in the text and the index.

For students with an interest in how analysis can be used in apparently unrelated parts of mateematics, a number of advanced sections give proofs of such topics as the transcendence of the number e, and a construction of the real numbers from set theoretic principles.

Calculus was not just the first university textbook I read, but one of the best.

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### Thomas says

This is a very good introduction to calculus and higher mathematics. Unlike most other calculus textbooks on the market, it does not burden the reader with mathematical topics that are inessential and at the same time it provides all the necessary tools in calculus to study other branches of mathematics. At the same time, the author proceeds at a leisurely pace and provides a lot of good calculus/analysis problems. As an aside, there is an answer book that enhances its value.

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### Ronald Lett says

This is a beautiful exposition of the theory of calculus from the axiomatic approach with full motivation and proof of the major theorems and some interesting facts that are seldom presented at this level. The proofs and exercises are the most elegant that I have seen in any calculus text, as is Spivak's hallmark. All that is necessary is a solid understanding of high school pre-calculus and mathematical curiousity. As other posters have said, if you are going to be a mathematics or physics major, there is no reason to even look at another calculus text. The only ones that come close are the treatments by Courant and Apostol.