

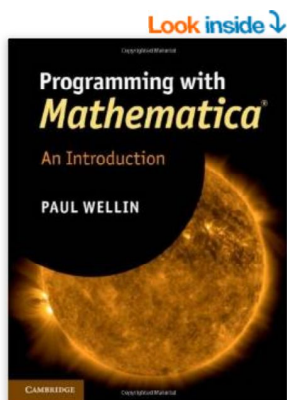
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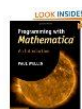
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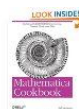
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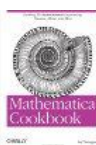


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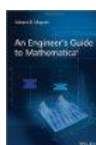
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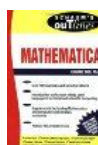
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### About the Author

Paul Wellin worked for Wolfram Research from the mid 1990s through 2011 directing the Mathematica training efforts with the Wolfram Education Group. He has taught mathematics at both public schools and at the university level for over 12 years. He has given talks, workshops and seminars around the world on the integration of technical computing and education and he has served on numerous government advisory panels on these issues. He is the author of several books on Mathematica.

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**Mathematica as a programming language** April 17 2013

By Diogo - [Published on Amazon.com](#)

Format: Hardcover

This book is quite nice and it was written in Mathematica itself, so this already provides an idea of how much one can do with Mathematica. Chapter 1 begins with a tour of some of the main capabilities using eye-catching examples (there are plenty of them throughout the text), which was exactly what I needed to get started. However, as I went deeper, I found that the book is mostly about the Mathematica language -- its structures, lists, rules, expressions, functions, etc. -- and less about "how to do math with Mathematica", which was perhaps what I was looking for.

Nevertheless, I kept reading and actually trying out many of the examples. After reading this book I feel quite comfortable with the tool and its language. For example, I can browse through the documentation and immediately understand the syntax of all Mathematica functions and how to use them in my code.

The rich set of examples throughout the book also helps in this respect, but in some examples it would be useful to have more detailed explanations. The author is absolutely proficient with Mathematica, but the text explanations could be made more precise, especially when the examples become more complex.

This means that using this book for self-study can be challenging. However, from a teaching perspective, the book is a wonderful resource.

One final comment, at times I found myself wondering how to type some special symbols in Mathematica, could not find it in the symbol palettes, and had to go look it up on the Web. For example, an undirected edge in a graph is written as Esc+ue+Esc. The book does not always mention how to type these special inputs.

19 of 20 people found the following review helpful

**great introduction book on programming with mathematica** April 6 2013

By XX - [Published on Amazon.com](#)

Format: Hardcover

This book is an updated version of the book "An Introduction to Programming with Mathematica®". The original book is already very good: nice and clear explanation, logical organization, etc. This book introduces the usage of several new functions in Mathematica 9.0 (such as Pick). Compared with the older version, there are two noticeable updates. One is regarding the examples. The author seems put lots of considerations in selecting the examples: the topics vary from computer science subject (such as random graph), numerical analysis, to data processing in biology (protein data, etc.). The other significant change is that patterns and rules are introduced immediately after the discussion of list, before functional programming. This seems a better choice than the older version, where rule programming is put after functional programming, considering that patterns and rules play such an important role in mathematica.

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**Best of recent books on Mathematica i've seen.** June 17 2013

By Tom Doggett - [Published on Amazon.com](#)

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This 700+ page textbook from Cambridge is pricey, but thorough. It tells the student to also reference Mathematica's own excellent explanations which are easily accessible within the program itself, but to learn Mathematica through the excellent built in reference material is like trying to drink the ocean. This book adds structure to the learning process. Don't miss the answers to the practice problems. They can be downloaded for free from the book store under this book's title and author's name ([www.cambridge.org/wellin](http://www.cambridge.org/wellin)). Working through these problems at the end of each chapter is clearly intended to be a large part of the learning process. They're not a snap so you need the answers PDF file to see tricks not covered in the chapter. This book uses Mathematica version 8.

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**This is the book that can do it for me ...** July 18 2014

By Lawrence J. Winkler - [Published on Amazon.com](#)

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This is the book that can do it for me. It helps with the paradigm shift requires, to use mathematica.

Other material I've looked at are reference books, whether large or small, free off the internet as PDF or various tidbits. With Mathematica's online documentation, they give you all the parts but never show how they all can be used together.

Mathematica programming requires that you see the computational world from its perspective. And its perspective is quite different from the typical programming languages.

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**One of the best Mathematica books I have seen** Dec 16 2013

By radio100 - [Published on Amazon.com](#)

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Many books on Mathematica try and teach a great lesson that you are supposed to intuit how to program the solution. The problem with that technique is you get lost because you would like to see many actual examples worked out in... well Mathematica. One would like to see new useful aspects as well, the book should hit all users.. So far this book works for me.. and I have quite a collection of Mathematica books. Be aware to learn Mathematica you must use it.... actually type stuff in and get the stuff you want out.

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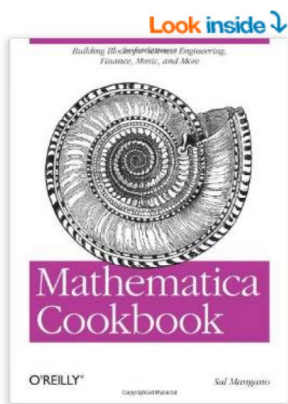
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by **Sal Mangano** (Author)

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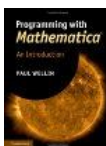
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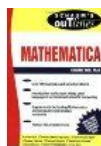
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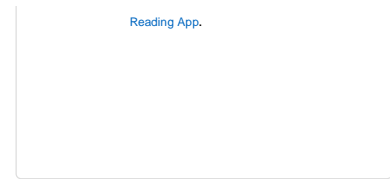
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## Product Description

### About the Author

Sal Mangano has been developing software since the days Borland Turbo C and has worked with an eclectic mix of programming languages and technologies. Sal worked on many mission-critical applications, especially in the area of financial-trading applications. In his day job, he works mostly with mainstream languages like C++ and Java so he chooses to play with more interesting technology whenever he gets a chance.

Sal's two books (XSLT Cookbook and Math Mathematica Cookbook) may seem to be an odd pair of technologies for a single author but there is a common theme that reflects his view at what makes a language powerful. Both Mathematica and XSLT rest on the idea of pattern matching and transformation. They may use these patterns in different ways and transformations to achieve different ends but they are both good at what they do and interesting to program in for a common reason. Sal's passion for these languages and ideas comes through in both these cookbooks. He also likes to push technologies as far as they can go and into every nook and cranny of application. This is reflected in the wide mix of recipes he assembled for these books.

Sal has a Master's degree in Computer Science from Polytechnic University.

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**Very good book, even for experienced Mathematica users**By [P. Rabinovitch](#) on June 27 2010

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I have been using Mathematica since v3, and still learned things from this book. In a few places the wording is awkward, and the author sometimes uses constructs he has not yet defined, but these are minor detractions from a very good book for the serious Mathematica user.

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**Kinda useful book, but we forewarned** Jan. 26 2014By [auilachs](#) - **Published on Amazon.com**Format: Paperback **Verified Purchase**

1. If you are new to Mathematica, this book is not for you. I have used Mathematica off and on for 10 years, so I know some of the basics that are omitted in this text.

2. This is for version 7. The current version is number 9. There are DEFINATELY compatibility issues in the examples. These can be overcome, but it will be frustrating if you don't have other books to refer to. If wolfram is going to change the syntax every 2-3 years, and the publishers keep selling old versions, people are going to get frustrated. Even microsoft-platform authors clearly put the version number on the cover. How much would you pay for a "new copy" of a software manual for Windows 3.1? Clearly, I should have looked more carefully when I bought it, but the publishers must know this is an issue.

3. The text says the code examples can be downloaded for free from the website. The website says you can download them for free from O'reilly. O'reilly wants \$4.99. It shouldn't be this hard to get the support materials on a \$50 book.

That stated, there are many nice examples in this text. It certainly beats the Rose and Smith Book (Version 4 from 2002).

10 of 12 people found the following review helpful

**Excellent product!!!!** Jan. 25 2011By [Paul Mchale](#) - **Published on Amazon.com**Format: Paperback **Verified Purchase**

This book was very, very helpful in a place where mathematica can be lacking. Example code. I was writing database code for mining data. This was going extremely poorly. This book got me going with it. I have referred back to it several times. It has been a real gem. I had the PDF for free and still bought the hard cover. Seriously, the PDF was so helpful that I bought the book. There are two other must haves for use of Mathematica:

An Introduction to Programming with Mathematica, Third Edition

Mathematica Navigator: Mathematics, Statistics and Graphics, Third Edition

I would read An Introduction to Programming with Mathematica first. Excellent book. If you understand 50% of the book, you will fly with Mathematica. The material is very accessible. Then read/skim the Cookbook. Then skim the Navigator so you know what they have. Seriously, good books.

Paul

9 of 13 people found the following review helpful

**Mathematica Cookbook: But you have to be a chef first** Oct. 7 2012By [Paul Revere](#) - **Published on Amazon.com**Format: Paperback **Verified Purchase**

I am a brand new baby in using Mathematica, and am using Mathematica 8. This book starts off throwing out code, consisting of, relative to the absolute new guy, advanced work.

This book persistently uses the "cookbook" theme, so I'll give my review with this metaphor. I feel like the

kitchen that the author expects is much more than is in the kitchen of a new programmer. I fortunately have taken a course in C, otherwise, I would have been utterly lost.

The other reviews of this book encourage that novice programmers and Mathematica users use this book as an advanced supplement with another more basic book on Mathematica. I fully agree.

However, the sections on plotting, customizing plots, and mathematical applications are very approachable and accessible. This book is not intended to teach one how to use Mathematica, but to add fine-tuned finishing touches.

4 of 6 people found the following review helpful

**Mathematica Cookbook is definitely handy !!** Feb. 18 2011

By Raja Kountanya - [Published on Amazon.com](#)

Format: Paperback

An extremely attractive title to even one who is an absolute dud in cooking, like me. But I was glad that it did not let me down at all. Though there are a lot of books on Mathematica arranged in several topics, this one suits an engineer like me who uses Mathematica as a programming language to solve problems in a specific domain.

If one is adequately motivated, even without much experience in Mathematica, this book can be a wonderful starting point. I would say I benefited much from the Functional Programming chapter. For instance, specifying default values for arguments to a function was not something I had known before. It is a pretty thick book so it would take a while to use up all the recipes in the book. For future editions, I would suggest to Sal Mangano to add material relating to Wolfram Workbench.

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**not what I was looking for** June 30 2013

By ES - [Published on Amazon.com](#)

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I have examined excerpts from a few Mathematica books but none are satisfactory. This one helps, but not that much. I would like to find a book that helps me recreate thousands of lines of Matlab code in Mathematica. I prefer to create separate functions and build large programs from them. Mathematica programmers seem to want to create long strings with innumerable {} and [] that represent a procedure. The Mathematica approach is OK and may appeal to new programmers but I find it difficult to transition. It's difficult to find documentation on how to build libraries of functions and use them. This book doesn't do it.

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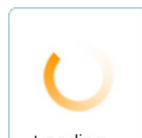
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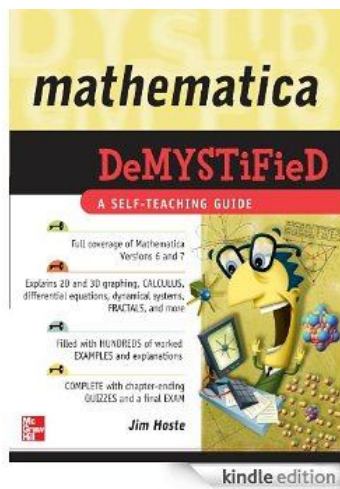
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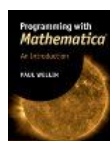


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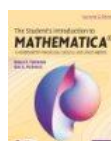
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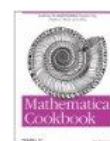
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Take full advantage of all the powerful capabilities of Mathematica with help from this hands-on guide. Filled with examples and step-by-step explanations, *Mathematica Demystified* takes you from your very first calculation all the way to plotting complex fractals.

Using an intuitive format, this book explains the fundamentals of Mathematica up front. Learn how to define functions, create 2-D graphs of functions, write basic programs, and use modules. You'll move on to 3-D graphics, calculus, polynomial, linear, and differential equations, dynamical systems, and fractals. Hundreds of examples with concise explanations make it easy to understand the material, and end-of-chapter quizzes and a final exam help reinforce learning.

This self-teaching guide offers:

- A quick way to get up and running on Mathematica
- Coverage of Mathematica 6 and 7
- Tips for avoiding and correcting syntax errors
- Details on creating slideshow presentations of your work
- No unnecessary technical jargon

- A time-saving approach to performing better on an exam or at work!

Simple enough for a beginner, but challenging enough for an advanced user, *Mathematica Demystified* is your shortcut to mastering this fully integrated technical computing software.

## About the Author

Jim Hoste, Ph.D. (Claremont, CA) is a Professor at Pitzer College, and a member of the Mathematical Sciences Research Institute. He's been an Associate Editor of the Journal of Knot Theory and Its Ramifications since 1991, and has authored dozens of research publications.

## Product Details

**Format:** Kindle Edition

**File Size:** 3898 KB

**Print Length:** 408 pages

**Simultaneous Device Usage:** Up to 4 simultaneous devices, per publisher limits

**Publisher:** McGraw-Hill Professional; 1 edition (Nov. 20 2008)

**Sold by:** Amazon Digital Services, Inc.

**Language:** English

**ASIN:** B008KID2J0

**Text-to-Speech:** Enabled

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**Amazon.com:** 18 reviews

20 of 21 people found the following review helpful

**It is a good book, but there are a lot better.** Feb. 1 2010

By Ilieneathyou - [Published on Amazon.com](#)

Format: Kindle Edition | [Verified Purchase](#)

First let me say that this is a good introduction to Mathematica. However, as the previous reviewer noted, there are a lot of 'syntax errors with the code'. It is as if the text was 'scanned' in from another source with some OCR software. This would not normally be a problem, unless you are just starting out trying to learn mathematica, and you can't figure out why, the program does not work as advertised; when it is really you should be typing in "Units", not "United" as the text calls for.

The latter section of the book is about fractals is informative and interesting. It is just that I think there are better ways to learn mathematica. Try going to the online Mathematica website.

[...]

Here is an awe inspiring mathematica programming course put out by the good folks at Davidson College. It is really an awesome set of lessons that will teach you everything from the flimsiest of basics to some really advanced stuff.

12 of 12 people found the following review helpful

**Great introduction to mathematica** Jan. 17 2009

By Armando-Malwani - [Published on Amazon.com](#)



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This is an excellent introduction to mathematica and also covers some crucial features of mathematica 7. If you want to get familiar with mathematica to accomplish undergraduate levels tasks then this is the book to read. The step by step lesson delve into the applications of mathematica such numerical analysis and you may end up sharpening you math skills in the process of working through the examples. To top it off there is test inj last chapter that will allow you to assess you mastery of the material. I highly recommend this to anyone who is a novice to mathematica. This is book is a great place to start.

17 of 19 people found the following review helpful

**SLOPPY Kindle Edition** Jan. 3 2010

By Customer - **Published on Amazon.com**

Format: Kindle Edition | **Verified Purchase**

After getting extremely frustrated with the results I was obtaining in Mathematica using the the sample problems from the Kindle version of Mathematica DeMYSTiFied, I compared the print version to the Kindle version. The Kindle version is replete with errors. A person may still be able to read a work of fiction with spelling and punctuation errors, but when trying to learn to use a program with strict syntax rules, missing or incorrect symbols in sample problems can lead to hours of frustration. I've learned a lot about Mathematica in spite of the Kindle version rather than because of it. If you want to learn Mathematica, buy the print version, not the Kindle version.

9 of 9 people found the following review helpful

**Not just for beginners** Sept. 15 2009

By Martha Takats - **Published on Amazon.com**

Format: Paperback | **Verified Purchase**

Although I am sure this book will work well for a motivated person who is new to Mathematica, it has definitely been useful for me--I have tackled Mathematica off an on for a number of years and even attended a couple of workshops. I have learned many things I didn't know previously, and the book exposed me to a lot of simple but non-trivial applications. The author teaches college mathematics and his teaching skill is obvious in the presentation and care in explaining the many examples. I have worked through more than half the book and found it to be completely compatible with the latest version of Mathematica; every example worked as indicated in the text.

7 of 9 people found the following review helpful

**Very good beginner book** April 1 2009

By Jayakumar - **Published on Amazon.com**

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Upside:

If you heard about Mathematica and have never used it. This is the book for you. I download the trail version and had the book by my side and went and zero to cursing in less than a 5 hrs of reading and trying out.

Downside:

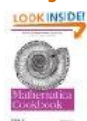
Mathematica is a large and complex software and once start exploring it you realize quickly that this book only scratched its surface.

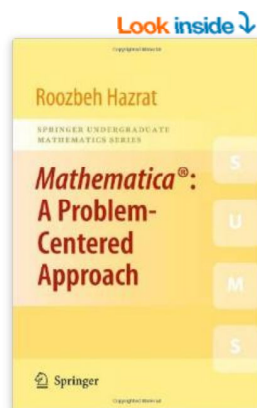
However I guess for most of the advanced stuff you have Wolfram's free online seminars, help and mailing lists. I showed up for a free seminar and asked a few advanced queries at the end of the seminar during the Q&A and the presenters where happy to answer them and even gave me some helpful tips on how to proceed.

One Line review: Great Start.. move on for more..

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by [Roozbeh Hazrat](#) (Author)

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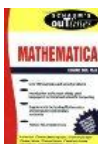
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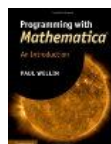
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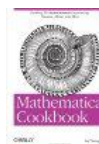


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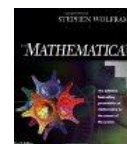


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Sal Mangano

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**The MATHEMATICA® Book, Version 4**

Stephen Wolfram

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Hardcover  
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**Paperback:** 180 pages

**Publisher:** Springer; 2010 edition (July 13 2010)

**Language:** English

**ISBN-10:** 1849962502

**ISBN-13:** 978-1849962506

**Product Dimensions:** 15.5 x 1.2 x 23.5 cm

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## Product Description

### Review

From the reviews:

"This is a pleasant and concise introduction to Mathematica, concentrating on its data structures and control structures ... . I say the book is 'pleasant' because reading it is like having the author sitting next to you, answering questions just as you raise them. ... valuable book, despite its simplicity and introductory nature. Even though I've been using Mathematica for about fifteen years, I still learned several useful things from the book." (Allen Stenger, The Mathematical Association of America, December, 2010)

"Mathematica is a powerful commercial computer algebra program. ... will allow users to solve a wide range of mathematical, science, engineering, economics, and other problems. Here, Hazrat ... uses a selection of problems to instruct the reader in the basic capabilities of Mathematica and its programming language. ... This volume will be most useful for libraries at institutions that have arranged institutional licenses to Mathematica. Summing Up: Recommended. Academic, two-year technical program, and professional libraries, all levels." (D. Z. Spicer, Choice, Vol. 48 (6), February, 2011)

"Dr. Hazrat's book aims to introduce and teach Mathematica to both beginners and those looking to understand some of the finer details of programming in Mathematica. ... is much better suited to a course in number theory or programming. ... contains many short Mathematica programs that solve simple mathematical problems. The programs demonstrate how to use a wide range of Mathematica commands to solve a wide array of problems. ... I enjoyed reading this book and learning a number of Mathematica 'tricks' while doing so." (John D. Carter, SIAM Review, Vol. 53 (3), 2011)

"This book is an elaborate hands-on tutorial for Mathematica ... . Exercises are given at the end of each section. For each problem and exercise a solution is given. ... The book is intended for self-study. Students with no particular background in mathematics as well as researchers in search of a computational tool should be able to delve quickly into the world of symbolic computation offered by Mathematica." (Rainer Horsch, Zentralblatt MATH, Vol. 1211, 2011)

### From the Back Cover

*Mathematica®: A Problem-Centered Approach* introduces the vast array of features and powerful mathematical functions of Mathematica using a multitude of clearly presented examples and worked- out problems. Each section starts with a description of a new topic and some basic examples. The author then demonstrates the use of new commands through three categories of problems

- the first category highlights those essential parts of the text that demonstrate the use of new commands in Mathematica whilst solving each problem presented;
- the second comprises problems that further demonstrate the use of commands previously introduced to tackle different situations; and
- the third presents more challenging problems for further study.

The intention is to enable the reader to learn from the codes, thus avoiding long and exhausting explanations.

While based on a computer algebra course taught to undergraduate students of mathematics, science, engineering and finance, the book also includes chapters on calculus and solving equations, and graphics, thus covering all the basic topics in Mathematica. With its strong focus upon programming and problem solving, and an emphasis on using numerical problems that do not need any particular background in mathematics, this book is also ideal for self-study and as an introduction to researchers who wish to use Mathematica as a computational tool.

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2 of 2 people found the following review helpful

**Creative introduction to Mathematica**By [Rajat Thomas](#) on Aug. 11 2011

Format: Paperback

Mathematica, unlike procedural languages like C, C++ and the like, is a "symbol/pattern" based language. This attribute makes it a powerful tool to do a lot of mathematical analysis. In order to appreciate the potential of Mathematica, procedural programmers like me need to shift their paradigm of programming. This book does exactly that. It focuses on the aspect of "Mathematica style" programming. It is not too advanced but if you are starting off in Mathematica, it would be great to have this book. I went through this book end-to-end in one week ( a few hours a day) and did all the exercises. And it is a great way to get to a decent Mathematica programming standard. From here you could get on with more advanced texts. So, highly recommended.

Was this review helpful to you?  [See the customer review](#)**Most Helpful Customer Reviews on Amazon.com** (beta)**Amazon.com:** 6 reviews

8 of 8 people found the following review helpful

**great place to start** June 26 2013By Sharyn O'Halloran - [Published on Amazon.com](#)Format: Kindle Edition **Verified Purchase**

This book covers the basics of Mathematica in a succinct, intelligent way. There are examples of functional programming, rule matching, graphics, calculus, and more of the essentials, all in under 200 pages. Not the only Mathematica book you'll want to read, but definitely an excellent first one.

10 of 12 people found the following review helpful

**Fantastic resource** Oct. 24 2011By Tom De Vries - [Published on Amazon.com](#)Format: Paperback **Verified Purchase**

I teach at an online school and use Mathematica for lots of things, preparing lessons, file management, test creation, etc.

As a high school math teacher, I don't have background in programming, but I'm always looking for ways to help me use Mathematica more effectively.

I have quite a few Mathematica books on my shelves, this is absolutely the best!

It's not huge, but all the things I have worked on so far, have been useful.

Some books have massive projects, but if they are beyond the experience or skill of the reader, they aren't useful.

I am at chapter 3, and this is the first book that hasn't made me give up in the first few chapters.

I've also peeked ahead to see what's coming, and the quality of the examples has me determined to see this right through to the end.

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I am learning a ton, and so far, everything has been clear, easy to follow, and very useful!

All the examples are accessible, and the fact that they are all "one liners" means I actually DO THEM, they are easy to type in and experiment with.

Finally, unlike some other books, the author actually provides answers!

Top marks for this one!!

4 of 4 people found the following review helpful

**A hands-on introduction to Mathematica** Feb. 17 2014

By Surya - [Published on Amazon.com](#)

Format: Paperback **Verified Purchase**

I recently switched from Matlab (after extensively using it for many years) to Mathematica primarily due to better symbolic computation support in Mathematica. Compared to Matlab, Mathematica's official documentation is totally lacking in user friendliness. The official Mathematica website is a confusing jungle of videos, sample demonstrations and documentation that explains each command on a standalone basis. In short, a newcomer is left bewildered on how to get a comprehensive overview of how to use Mathematica effectively. In comes Dr. Hazrat's book! It guides the user through systematic process, using problems typically encountered in engineering/math curriculum, to provide a comprehensive overview of Mathematica's capabilities. After going through this book, I was able to make sense of the user documentation at Mathematica's official website. Note, Dr. Hazrat's book, because of limited size, does not cover topics such as Web Mathematica (cloud version) or development of Mathematica packages for standalone/compiled program development. For this, user will have to seek documentation at Mathematica's official website or look for another (hopefully, equally good) book. I give it 5 stars because it gave me the necessary knowledge and confidence to strike out on my own in using Mathematica effectively.

8 of 10 people found the following review helpful

**Work through the book for maximum accomplishment** March 7 2011

By MOS was 71331 - [Published on Amazon.com](#)

Format: Paperback **Verified Purchase**

I can't say I've enjoyed this book, because I've had to WORK to master it. I'm now on the last two pages of chapter 6, and I've easily spent well over 100 hours on my iMac to get this far. Overall, the writing and, particularly, the coding is clear. Its examples and problems are interesting and (at least to me) challenging. However frustrated I sometimes feel as I try to solve a problem or example, I have a feeling of accomplishment when I'm done. I certainly recommend the book to other Mathematica users.

5 of 6 people found the following review helpful

**Excellent book--the author apparently knows what the reader wants and delivers!**

By JFG - [Published on Amazon.com](#)

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The author surfaces many useful tidbits of helpful programming tips needed to get the job done with minimal sturm-und-drang. In terms of the basics, many books lack these seemingly trivial, yet actually important 'extra' pieces, by assuming that you should know these parts--that are absolutely essential, yet they omit. This is especially relevant if you are coming from a programming background involving: C, C++, C#, or other similars, in which functions are not quite defined the same way (--i.e., they are more limited). For me, this is truly the 'missing manual' I was searching for, yet could not find for a while, until I took a chance on this fine book. The examples then venture into advanced areas, and not surprisingly, the same (high-quality) level of excellence is maintained. To the author: many thanks for your Rosetta Stone that shows so many informative examples. (Other authors: please take note of this excellent example of pedagogy! I wish all programming book authors realized what they may be missing, especially in the case of an exotic computer language such as Mathematica.) I will gladly purchase any other works on Mathematica by this thoughtful author.

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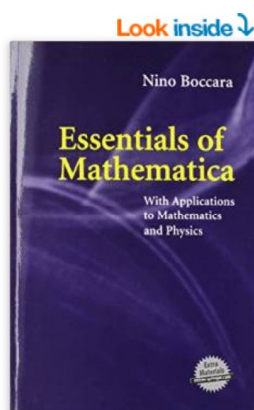
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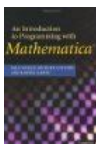
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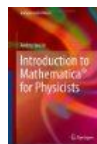
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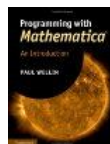
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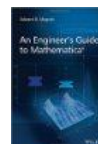
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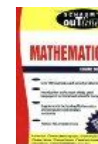
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## Product Description

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From the reviews:

"Mathematica is a software package that makes mathematics easier for scientists and engineers. ... The range of examples is amazing ... . The book is well written ... . Summing Up: Highly recommended. Upper-division undergraduates through professionals." (P. Cull, CHOICE, Vol. v4 (3), November, 2007)

"The book ensures a thorough training in Mathematica, which is one of the most popular software packages ... . The structure of the volume was designed to cover the objectives of different groups of readers, with various levels of knowledge, from beginners needing assistance for the basic exploitation of the package, to experienced users focusing on specific types of problems. ... reflects a considerable teaching experience which also recommends it as a valuable companion for educators interested in preparing or upgrading lecture notes and seminars." (Octavian Pastravanu, Zentralblatt MATH, Vol. 1134 (12), 2008)

### From the Back Cover

*Essentials of Mathematica: With Applications to Mathematics and Physics*, based on the lecture notes of a course taught at the University of Illinois at Chicago to advanced undergraduate and graduate students, teaches how to use Mathematica to solve a wide variety problems in mathematics and physics. The text assumes no previous exposure to Mathematica. It is illustrated with many detailed examples that require the student to construct meticulous, step-by-step, easy-to-read Mathematica programs. It includes many detailed graphics, with instructions to students on how to achieve similar results.

The aim of *Essentials of Mathematica* is to provide the reader with Mathematica proficiency quickly and efficiently. The first part, in which the reader learns how to use a variety of Mathematica commands, avoids long discussions and overly sophisticated techniques. The second part covers a broad range of applications in physics and applied mathematics, including negative and complex bases, the double pendulum, fractals, the logistic map, the quantum harmonic oscillator, the quantum square potential, the Van der Pol oscillator, the Duffing oscillator, multilane bidirectional pedestrian traffic, public-key encryption, tautochrone curves, Iterated function systems, motion of a bead on a rotating circle, Mersenne and perfect numbers, Lindenmayer systems, skydiving, Lorenz equations, the Foucault's pendulum, and Julia and Mandelbrot sets.

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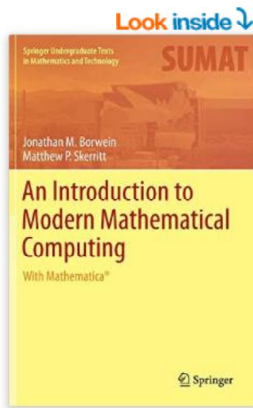
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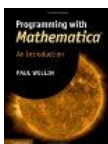
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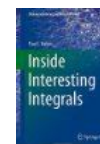
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Thirty years ago, mathematical computation was difficult to perform and thus used sparingly. However, mathematical computation has become far more accessible due to the emergence of the personal computer, the discovery of fiber-optics and the consequent development of the modern internet, and the creation of Maple™, Mathematica®, and Matlab®.

*An Introduction to Modern Mathematical Computing: With Mathematica®* looks beyond teaching the syntax and semantics of *Mathematica* and similar programs, and focuses on why they are necessary tools for anyone who engages in mathematics. It is an essential read for mathematicians, mathematics educators, computer scientists, engineers, scientists, and anyone who wishes to expand their knowledge of mathematics. This volume will also explain how to become an "experimental mathematician," and will supply useful information about how to create better proofs.

The text covers material in elementary number theory, calculus, multivariable calculus, introductory linear algebra, and visualization and interactive geometric computation. It is intended for upper-undergraduate students, and as a reference guide for anyone who wishes to learn to use the *Mathematica* program.

Also by J.M. Borwein and M.B. Skerritt: *An Introduction to Modern Mathematical Computing: With Maple™*, © 2011, ISBN: 978-1-4614-0121-6, 216 p. and 81 color illustrations.

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**Well written tutorial shows the reader how to explore mathematics using a computer algebra system** May 4 2013

By David Bakin - [Published on Amazon.com](#)

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An Introduction to Modern Mathematical Computing with Mathematica" by Borwein and Skerritt, aims to show how you can improve your understanding of mathematics by experimenting in a Computer Algebra System (CAS). It uses Mathematica (there's a Maple version available). The book picks three areas of (lower division college) math to work with - Elementary number theory (including tastes of the Fibonacci sequence, perfect numbers and amicable pairs, continued fractions, and the sieve of Eratosthenes), Calculus (with tastes of limits, differentiation, integration, differential equations, and surfaces and volumes of rotation), and linear algebra - and uses a tutorial style to demonstrate how to use a CAS to perform experiments, to compute things in multiple ways to enhance your understanding of the relationships between different mathematical ideas, and to discover edge cases where theorems - or your intuitions - might not work.

Along the way it teaches the minimum you need to know about Mathematica to make progress. The goal isn't to teach Mathematica as a programming language but as an adjunct to mathematical study. What is covered includes basic syntax, defining functions, conditionals and loops, and some Mathematica-specific features (not common in mainstream programming languages) like pattern matching. Different kinds of basic plotting functions are also described and used. At all times the reader is encouraged to look for more information in the Mathematica documentation - and given search terms to help with that.

The section on elementary number theory is where the Mathematica syntax and semantics is introduced, including loops, functions, and numerical versus symbolic evaluation. The calculus section emphasizes the Mathematica plotting functions. Finally, the linear algebra section adds matrices and more on symbolic evaluation (and could really have used some plotting examples: plotting (or better, animation) would have been very effective to show what eigenvalues and eigenvectors are and how they really work).

Each section ends with a number of (simple) exercises to help ensure that you've learned both the math and the Mathematica covered in the section. And, each section also has a set of "Further Explorations" which are related mathematical questions that are intended to be used as a launching point to learn something using the techniques explained in the book (though the further explorations in the linear algebra section are rather slim).

There's a final section on "visualization" and geometry: A few more Mathematica features related to plotting, and a suggestion that you can use other software tools - besides a CAS - for the same purposes: to visualize mathematics and gain understanding. They use the dynamic geometry program Cinderella as the example software here, providing two simple and short investigations in plane geometry. (I appreciated this as Cinderella happens to be my dynamic geometry program of choice - having excellent built-in support for non-Euclidean geometry, also affine and projective geometry, also simple physics simulations, and is fully programmable besides.)

This book really meets its objective of showing the reader how to explore mathematics using a computer algebra system, while at the same time giving a brief introduction to a specific CAS, Mathematica. It is well written. I highly recommend it as an introduction to this great modern way of learning mathematics. To further your practice in both Mathematica itself and in using Mathematica to explore mathematics, I also highly recommend Mathematica® in Action: Problem Solving Through Visualization and Computation, by Stan Wagon. It has much more mathematics, and much more Mathematica.

(I do have to point out that the book has a lot of typos. In fact, I should stop here. The typos (largely in Mathematica code) are easily fixed by the reader and don't detract from the contents of the book. That's why I give this book 5 stars even though it has typos. So you can stop reading here unless you'd like to help me work off my pique.

When I say this book has typos: I mean, it has plenty of typos. I marked 50 in the first 100 pages then gave up. Most are trivial errors in Mathematica code, e.g., missing commas or misplaced braces, that are easily seen by the reader or discovered as soon as you type the code into Mathematica, and in these cases the fixes are obvious so there's no problem. In some places the typo isn't so obvious but you can tell from context what's wrong. Elsewhere there are copy-and-paste errors where two Mathematica examples, supposedly different ways to do something, are in fact identical. Two of the plots, if you actually execute their code, produce slightly



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different results from the (correct, intended) picture in the book. Several times an equation being discussed has different variables in the text (e.g., "a") than in the code sample (e.g., "x"), or even in two consecutive sentences in the text! In a couple of places in the text, the variable is in one place in a sentence the Greek letter theta and in another place in the same sentence the word "theta".

In one remarkable typo (page 101) the discussion in the book, having previously encouraged the use of the online Inverse Symbolic Calculator, wants to make the point that you shouldn't rely on the results from the ISC: you use them as a suggestion, and validate them some other way. This is a good point, but the example it gives is totally bollyxed up. The authors show a calculation of a particular integral giving a specific 10-digit numerical value. Then they look it up using the ISC and get a suggestion for a formula for this value that matches to 10 digits. Then they say that if you actually calculated the integral beyond 10 digits it becomes obvious that the value of the integral is not the value of the formula. The problem is: The numerical value they give for the integral has its last two digits transposed. And THAT transposed value is the one they looked up in the ISC (which I determined by plugging the formula into Mathematica and getting its numeric value to 10 digits). So no wonder it didn't match! The point of the paragraph is still valid; the example was broken, because of a bad copy of the value from Mathematica into the text!

Why am I harping on these typos so much when I say they don't really affect the content of the book, which is still excellent? Pique! It is hard to write a book, I know. So hard, that even though I'd like to sometime write a technical book of my own I haven't done it yet and doubt I ever will. I have a lot of respect for book authors for writing books. One of the authors of this book, Borwein, has written 10 books (and hundreds of papers). What is so difficult for me to do is apparently so easy for him that he can just write 'em and publish 'em and get on to the next thing, without even worrying about the details. Couldn't he have found an undergraduate who would have proofread the book, typing the expressions into Mathematica, for \$100, or even just brownie points? Where's the pride? See: it is just my pique getting scratched in these last 4 paragraphs. Don't let it stop you from learning from this very good book.)

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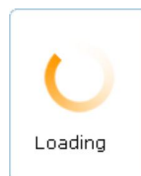
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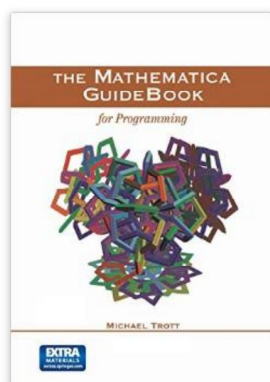
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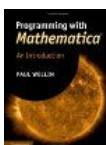
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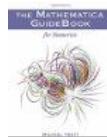
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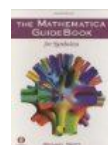
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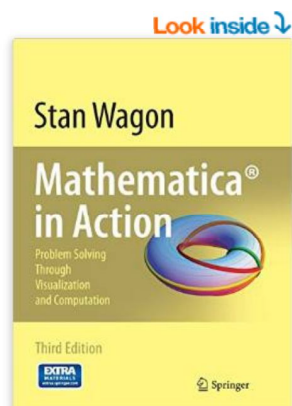
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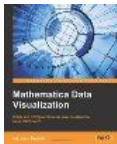
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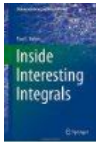
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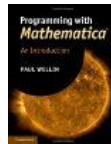
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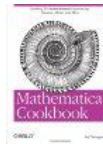


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This book is a pleasing potpourri of *Mathematica* showpieces, picked to show the value of *Mathematica* for mathematics teaching and investigation... Although there is an introductory chapter explaining *Mathematica*, it is just enough to get you oriented and the examples go far beyond anything in this introduction. This book may motivate you to learn *Mathematica* but it won't teach it to you.

The book is full of interesting things. The first half focuses on visualization and the math is relatively elementary (nothing beyond multivariable calculus). The second half works on much harder problems. —MAA Reviews

"Beginners will benefit from the book as will more experienced Mathematica programmers as the explorations build from simple introductory concepts ... . The best feature of the book is that it teaches via interesting examples. ... The writing is remarkably good. ... The book contains a good number of color illustrations and is rich in Mathematica output. ... interesting explorations with clear and engaging writing are hard to come by. I'm delighted to have this book in my collection." (Playing with Mathematica, June, 2011)

*Mathematica in Action* is not a guidebook nor a reference manual. It is best described as a project book full of ideas and inspiration for research projects for anyone from high school students to professional mathematicians. It combines real mathematics with sophisticated coding... I highly recommend *Mathematica in Action*, both for its mathematical content and for its *Mathematica* content. You don't have to be a serious *Mathematica* user to enjoy this book or even use it. You can read it for mathematical ideas and inspiration without touching a keyboard, or, if you are a devotee of a different software system, you might be inspired to translate the examples into your favorite language. —The Mathematical Association of America, September, 2011

"This the third edition of the famous book 'Mathematica in Action' in which the author guides beginner as well as veteran users alike through Mathematica's powerful tools for mathematical exploration ... ." (T. C. Mohan, Zentralblatt MATH, Vol. 1198, 2010)

### From the Back Cover

In this third edition of *Mathematica® in Action*, award-winning author Stan Wagon guides beginner and veteran users alike through *Mathematica*'s powerful tools for mathematical exploration. The transition to *Mathematica 7* is made smooth with plenty of examples and case studies that utilize *Mathematica*'s newest tools, such as dynamic manipulations and adaptive three-dimensional plotting. *Mathematica in Action* also emphasizes the breadth of *Mathematica* and the impressive results of combining techniques from different areas. This material enables the reader to use *Mathematica* to solve a variety of complex problems.

Case studies ranging from elementary to sophisticated are provided throughout. Whenever possible, the book shows how *Mathematica* can be used to discover new things. Striking examples include the design of a road on which a square wheel bike can ride, the design of a drill that can drill square holes, an illustration of the Banach—Tarski Paradox via hyperbolic geometry, new and surprising formulas for  $p$ , the discovery of shadow orbits for chaotic systems, and the use of powerful new capabilities for three-dimensional graphics. Visualization is emphasized throughout, with finely crafted graphics in each chapter.

Wagon is the author of eleven books on mathematics, including *A Course in Computational Number Theory*, named one of the ten best math books of 2000 by the American Library Association. He has written extensively on the educational applications of *Mathematica*, including the books *VisualDSolve: Visualizing Differential Equations with Mathematica*, and *Animating Calculus: Mathematica Notebooks for the Laboratory*.

#### From reviews of the second edition:

"In a dazzling range of examples Stan Wagon shows how such features as animation, 3-dimensional graphics and high-precision integer arithmetic can contribute to our understanding and enjoyment of mathematics."

—Richard Walker, *The Mathematical Gazette*

"The bottom line is that *Mathematica in Action* is an outstanding book containing many examples of real uses of *Mathematica* for the novice, intermediate, and expert user."

—Mark McClure, *Mathematica in Education and Research*

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**Outstanding Insights into Mathematica** July 25 2010

By Salvatore R. Mangano - **Published on Amazon.com**

Format: Paperback **Verified Purchase**

Stan Wagon's long awaited 3'rd edition of Mathematica in Action fulfilled all my hopes. Every page is filled with deep insight into both topic covered and the related Mathematica implementation. Here is just a small sample of some of the things you will read about and learn:

- 1) How to effectively plot unstable functions.
- 2) How to speed up animations
- 3) Techniques for getting the most out of Mathematica's 3D plotting functions
- 4) Practical advice and examples using Mathematica's dynamic interactivity features (Manipulate, Dynamic, etc.)
- 5) Beautiful ways to visualize the behavior of Differential Equations.
- 6) An entire chapter dedicated to optimization and another to computational geometry (I have only skimmed these at this time)

Naturally the book revisits a lot material from the 2nd edition but there is enough new material to reward owners of older editions, especially with respect to the latest features of Mathematica 7.

The book has a slight leaning towards pure mathematics (whole chapters on such topics as Prime Numbers, Penrose Tiles, Fractals, Pi, Banach-Tarski Paradox and Riemann Zeta Function). Readers whose needs are more firmly rooted in the practical (statistics, finance, image processing, audio processing, parallel processing) might look at some of the other recent Mathematica publications (yes, that is shameful plug!) to fill out their Mathematica knowledge. However, even within the theoretical coverage there is priceless gems of Mathematica know-how that only an author like Stan (who has spent a significant portion of his life using and teaching Mathematica) could provide.

Two added bonuses:

- Many full color images and plots
- The notebooks containing the code (but not text) for every chapter.

I wholeheartedly recommend this book!

9 of 10 people found the following review helpful

**Kindle version is inaccurate** Dec 26 2012

By Joseph A. Dudar - **Published on Amazon.com**

Format: Kindle Edition **Verified Purchase**

This is a very good book, but only in paper form. The 3e kindle edition has significant errors that do not

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appear in my 2e paper copy. Judging by the specific differences, this appears to be an artifact of the kindle conversion process.

While such errors are annoying in general writing, they render this particular book unusable. Terse Mathematica techniques do not work if just a single character is incorrect.

3 of 3 people found the following review helpful

**A "must have" for Mathematica lovers** April 3 2011

By Raja Kountanya - [Published on Amazon.com](#)

Format: Paperback **Verified Purchase**

The book is interesting, entertaining and also a ready reference. Gets you thinking of the explorations you can undertake for both professional and recreational purposes.

The book is also typeset very well with glossy pages which add to its attractiveness. I keep it on my coffee table and flip through it while sipping coffee !

1 of 1 people found the following review helpful

**do not buy for kindle** Dec 5 2013

By pef23 - [Published on Amazon.com](#)

Format: Kindle Edition **Verified Purchase**

Do not order the kindle edition - complete waste of money as the formatting and text is unusable. I wish I could get my money back.

2 of 3 people found the following review helpful

**Mathematic explained in simple terms** Sept. 6 2012

By Stuart I. Riley - [Published on Amazon.com](#)

Format: Kindle Edition **Verified Purchase**

As a science enthusiast and a person who likes to dabble in electronics and design, math is a key signature to getting the principles and understanding of electronics. This is a "beginners" book to start off with simple examples, but does not leave out the advanced mathematician in theory either. As a progressive in learning the basics, more and more advanced topics are introduced that show how mapping, plotting, and calculations for multiple linear and non-linear systems can be tested and executed with ease.

You will need the full version of Mathematica to take advantage of the more advanced principles, but that is optional.

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