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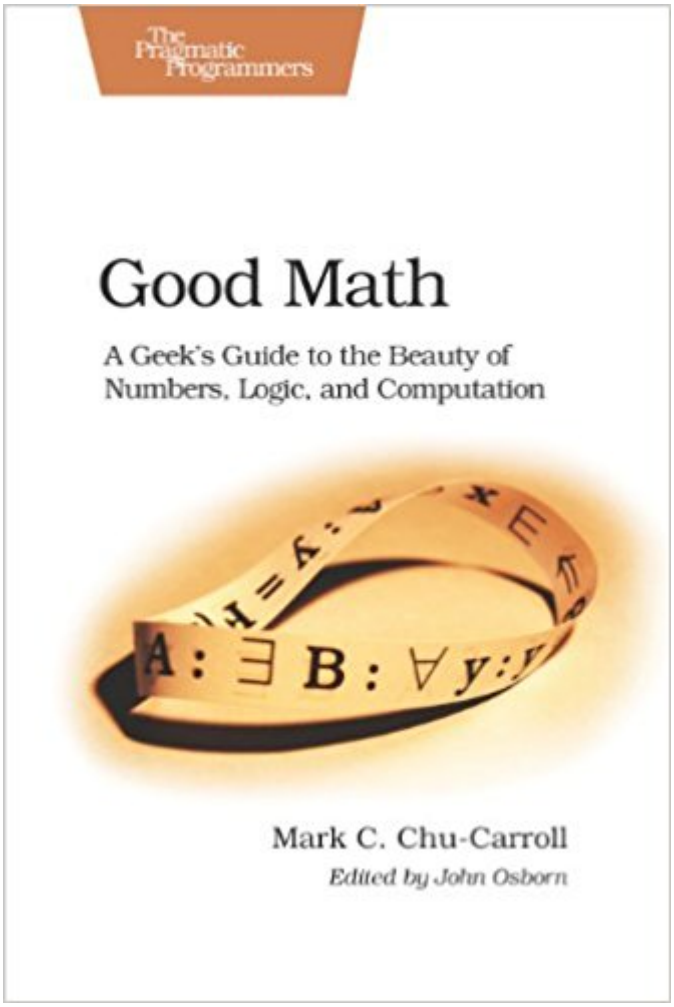
Good Math: A Geek's Guide To The Beauty Of Numbers, Logic, And Computation (Pragmatic Programmers)



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Synopsis

Mathematics is beautiful--and it can be fun and exciting as well as practical. Good Math is your guide to some of the most intriguing topics from two thousand years of mathematics: from Egyptian fractions to Turing machines; from the real meaning of numbers to proof trees, group symmetry, and mechanical computation. If you've ever wondered what lay beyond the proofs you struggled to complete in high school geometry, or what limits the capabilities of computer on your desk, this is the book for you.Why do Roman numerals persist? How do we know that some infinities are larger than others? And how can we know for certain a program will ever finish? In this fast-paced tour of modern and not-so-modern math, computer scientist Mark Chu-Carroll explores some of the greatest breakthroughs and disappointments of more than two thousand years of mathematical thought. There is joy and beauty in mathematics, and in more than two dozen essays drawn from his popular "Good Math" blog, you'll find concepts, proofs, and examples that are often surprising, counterintuitive, or just plain weird.Mark begins his journey with the basics of numbers, with an entertaining trip through the integers and the natural, rational, irrational, and transcendental numbers. The voyage continues with a look at some of the oddest numbers in mathematics, including zero, the golden ratio, imaginary numbers, Roman numerals, and Egyptian and continuing fractions. After a deep dive into modern logic, including an introduction to linear logic and the logic-savvy Prolog language, the trip concludes with a tour of modern set theory and the advances and paradoxes of modern mechanical computing.If your high school or college math courses left you grasping for the inner meaning behind the numbers, Mark's book will both entertain and enlighten you.

Book Information

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Customer Reviews

reviewers rightfully mention the computational background of this book. Unfortunately, the publishers are giving "canned" general science readership hype and background reviews (possibly to increase the readership base) on the usual pi, golden triangle, zero, i, e, etc. topics that make for pop sci math. This book is FAR BETTER (and a LOT different) than those! Publishers take note: you will sell MORE of this fine text by simply being honest and pointing out how different it really is by bringing in unique computational topics and examples.Sure, Mark covers a bit of background on historic (and even pop sci) math, and does the usual genuflection to pi, zero, e, i, etc. but then rapidly moves into computational math topics never covered in the pop sci books like group theory, transfinites, the halting problem, and many more, using computer math as both examples and primary chapters in some cases. Even where he covers the i/e/pi topics, he does so with very unique examples, including computation (I'm calling numerical analysis and graph theory computer math so I don't scare away potential readers, because the author DOES NOT write or assume math above high school level. On the other hand, if you are in math, you'll still love many of the building blocks here. I write DSLs for robotics and even with a Masters in applied math thoroughly enjoyed this book).Highly recommended, ironically FOR anyone with a general interest in very up to date math topics, due to the examples from IT. Knowing about the computer frame of reference can really enhance your enjoyment even as a general math fan, because Chu-Carroll uses examples, humor and very clear explanations even though many of the topics are new, relevant, up to date and unique.

I am not a mathematician. I am not a programer. I am perhaps less of a geek than I thought. My introduction to the term "set theory" did not occur until after high school nearly 50 years ago; and calculus has remained for me some incomprehensible higher concept, seemingly of no particular use to me. Mr. Chu-Carroll makes the claim in his preface "I've tried to write it so that it's accessible to anyone with a basic highschool background in math." For me, he delivered, albeit with no small effort on my part.Mr. Chu-Carroll also states that "This isn't a book that you need to read cover-to-cover. Each chapter is mostly stand-alone." Perhaps for those with more recent or advanced experience than mine that is true. I read everything cover-to-cover, it is what I do with

books regardless of type; nor do I feel comfortable reviewing something I have not read completely through. For me (see above parameters) that is probably best because the material on set theory went far beyond the level I was exposed to, much less that which I actually remember. That was helpful to me further on in the book, which follows the historical development of math in a rather abridged format (although including several pointers to additional sources for the curious). When I did reach the chapters on calculus, the lights started coming on. Calculus is not a single entity, who knew? Well, probably any semi-serious math student, but not I. "Functional programming languages like Haskell, Scala, and even Lisp are so strongly based in lambda calculus that they're just alternative syntaxes for pure lambda calculus. Lambda calculus is largely the basis for several programing languages." Ah, I have a distant nodding acquaintance with Lisp through my use of AutoCAD, now this is getting interesting.

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