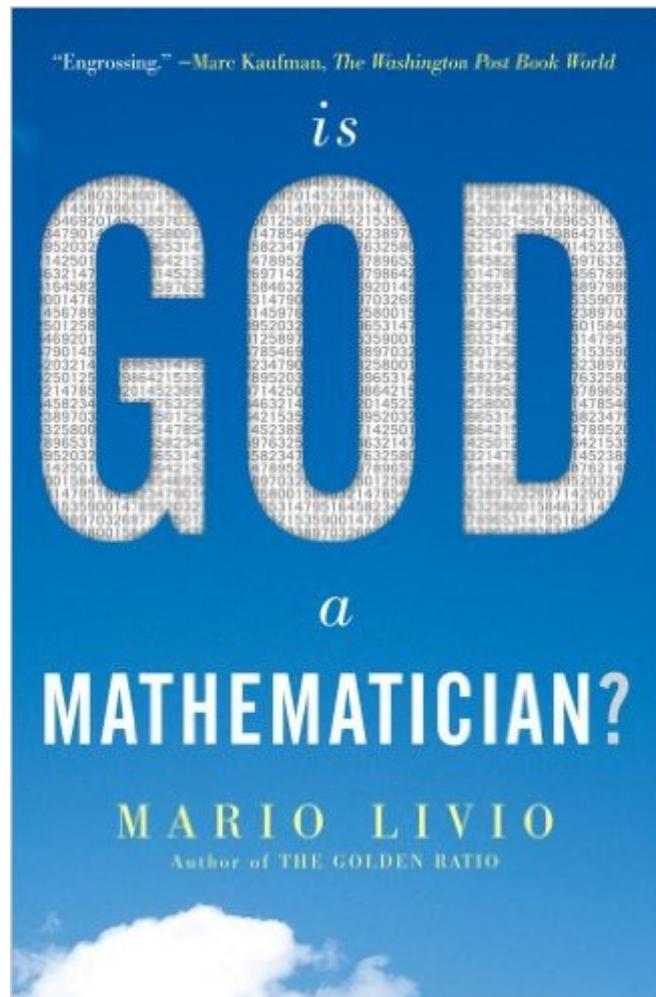


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# Is God A Mathematician?



## Synopsis

Bestselling author and astrophysicist Mario Livio examines the lives and theories of history's greatest mathematicians to ask how "if mathematics is an abstract construction of the human mind" it can so perfectly explain the physical world. Nobel Laureate Eugene Wigner once wondered about the unreasonable effectiveness of mathematics in the formulation of the laws of nature. > investigates why mathematics is as powerful as it is. From ancient times to the present, scientists and philosophers have marveled at how such a seemingly abstract discipline could so perfectly explain the natural world. More than that "mathematics has often made predictions, for example, about subatomic particles or cosmic phenomena that were unknown at the time, but later were proven to be true. Is mathematics ultimately invented or discovered? If, as Einstein insisted, mathematics is a product of human thought that is independent of experience, how can it so accurately describe and even predict the world around us? Physicist and author Mario Livio brilliantly explores mathematical ideas from Pythagoras to the present day as he shows us how intriguing questions and ingenious answers have led to ever deeper insights into our world. This fascinating book will interest anyone curious about the human mind, the scientific world, and the relationship between them.

## Book Information

Paperback: 308 pages

Publisher: Simon & Schuster; unknown edition (January 19, 2010)

Language: English

ISBN-10: 0743294068

ISBN-13: 978-0743294065

Product Dimensions: 5.5 x 0.9 x 8.4 inches

Shipping Weight: 11.4 ounces (View shipping rates and policies)

Average Customer Review: 4.1 out of 5 stars Â See all reviews Â (121 customer reviews)

Best Sellers Rank: #91,350 in Books (See Top 100 in Books) #53 in Books > Politics & Social Sciences > Philosophy > Epistemology #77 in Books > Science & Math > Mathematics > History #533 in Books > Science & Math > History & Philosophy

## Customer Reviews

The specific question posed in the title doesn't actually get answered (at least not directly by God). In fact, it gets illuminated, and in the most entertaining and probing ways. Dr. Livio weaves together science, history, and philosophy breathing life into some of the most famous thinkers and thinking

about mathematics' extraordinary utility in describing our physical world. He explains these sometimes contrary perspectives so clearly and concisely you feel you could almost write a layman's treatise yourself. Were he a teacher at my high school or university he would have been my favorite, leaving me with not only profound understandings but, perhaps moreso, with profound questions.

I enjoyed this book but, with all due respect to reviewers who found it deeply insightful on the title topic, I have to agree with Stephen Grey and PBCup. It's a competent and entertaining, superficial account of the relation between mathematics and reality. As a history of mathematics it's equally competent and entertaining, but highly selective. If you want breadth or depth, look elsewhere, and be prepared to sacrifice "entertaining." This book is better described as a terrific essay about how mathematicians feel about the relation of their work with reality. Judged on this basis, it's up there with the great essays of science. It's book-length because the middle chapters are masterfully-told history vignettes that set the background for the meat of the essay. Many of the key points are made by direct quotation from great mathematicians and the book spends more time on why people chose problems and how they felt about solutions, than on the pure mathematics. The results of this inquiry are unexpected and fascinating. I think the "God" of the title is not the one who created the universe, as you might expect, but the one in whose image humans were made.

I had two reactions to the book. The first is a little negative since the book does not answer the question posed in the title, or the real issue the book sets out to investigate: Why is mathematics so unreasonably effective at describing nature? Mathematics is used to understand and describe everything from radioactive decay, the movements of planets, the way our brain works, the construction of bridges, and countless other phenomenon. But why does it work so well? The other reaction is positive. The book provides an interesting overview of mathematical history over the past 2,000 years. All concepts are explained in everyday language; no mathematical background is required. This is a strong point of the book. The book is whirlwind tour of mathematical history covering the main ideas of the greatest mathematical thinkers, and touching on such subjects as logic, geometry, gravitation, and knots.

Maybe. Or maybe not. One conclusion is certain from this book: the author does not really tackle this exact question as his main theme. His big question for the reader, rather, is: has mathematics been discovered, or has it been invented? His answer turns out to be, "yes." Sometimes he argues

for the one idea, sometimes for the other, either way strongly. God, perhaps, has to rule on the case, but Mario Livio certainly does not propose this! The "Plato" approach he speaks about at length takes the "discovery" side of the debate. Oddly enough, to this reviewer the amount of time spent on Mr. Plato probably muddled the story line, rather than clarifying. Nevertheless, "Is God a Mathematician?" flowed smoothly and satisfactorily. When treating a topic like a history in mathematics, an author could take on a theme and pick among hundreds of personages to flesh out the theme. One has the feeling that Dr. Livio did just that. Fortunately, his book gets credit for being both interesting and informative, thus worth reading. He does a fine job spelling out some technical topics for the world of us amateur, non-doctoral people. Much of the book sets up more like an anthology. The bad part: harder for the reader to keep the chapter threads connected. The good part: if you do not like a particular personage's story, you can skip to the next. Something gets lost, of course, but it may have been partially lost anyway. For theists looking for a deity's ownership of mathematics, the author's answer is not really there. For those without religious belief, the answer would not matter anyway. So, forget the title words and enjoy the book for its stories. You might also be able to figure out the "Plato" part in more detail than did this reviewer.

Anyone interested in mathematics, philosophy, or science, will love this book. Even though I always knew that all the fundamental theories of the universe are based on mathematics, it somehow never occurred to me to ask: What is it that makes mathematics so powerful? Livio explains why the question is even more important than the answer. What makes this book quite unique is the fact that it is not so much a history of mathematics, as it is a history of ideas on mathematics.

After his fabulous "The Golden Ratio," Livio now tackles the question of the "unreasonable effectiveness" of mathematics in explaining the world. Mixing philosophy, mathematics, and the sciences, he creates an intellectual tension that reads almost like a mystery novel. I liked in particular the chapter on the ideas of Archimedes and Galileo, and the chapter on logic, which was challenging but fascinating.

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