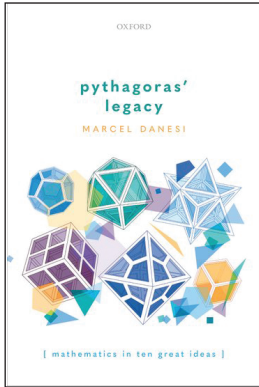




# BOOKSHELF

New and Noteworthy Titles on our Bookshelf  
May 2021

Oxford University Press, 2020, 288 pages. Cover image courtesy of Oxford University Press.



***Pythagoras' Legacy***  
*Mathematics in Ten Great Ideas*  
by Marcel Danesi

This book is a whirlwind overview of what Danesi thinks are the ten most significant ideas in mathematics. Not surprisingly, *Pythagoras' Legacy* opens with a chapter devoted to the Pythagorean theorem and related topics such as the irrationality of  $\sqrt{2}$  and Fermat's Last Theorem. Subsequent chapters concern the prime numbers, the number zero,  $\pi$ , exponents and logarithms,  $e$ , the imaginary unit  $i$ , the nature of infinity, decidability, and algorithms.

This popular science title is suitable for mathematically curious laypeople, along with intellectually adventurous middle or high school students. Most of the subjects covered in *Pythagoras' Legacy* are approached without calculus, although the reader should be familiar with basic algebra and analytic geometry. Each of the book's ten chapters ends with several puzzles and problems for further exploration; solutions are provided at the back of the book. More sophisticated readers may not gain much from *Pythagoras' Legacy* and there are a number of places in which the book is mildly inaccurate. For example, the Riemann zeta function (p. 32) is defined as a finite sum, and Danesi states (p. 116) that Gödel "proved that within any formal system of logic there are propositions (statements) that can be neither proved nor disproved" (this applies only to sufficiently complex formal systems that can model basic arithmetic). Nevertheless, *Pythagoras' Legacy* takes the reader on an exciting tour of many important mathematical highlights from the subject's long and complex history.

***The Boy Who Dreamed of Infinity***  
*A Tale of the Genius Ramanujan*  
by Amy Alznauer and illustrated by Daniel Miyares  
Candlewick Press, 2020, 48 pages

This lavishly illustrated children's book focuses on the early life of Srinivasa Ramanujan (1887–1920), the enigmatic genius whose work has inspired generations of mathematicians. *Notices* readers will no doubt recall that the fiercely independent Ramanujan discovered hundreds of innovative theorems and beautiful formulas before attracting the attention of G. H. Hardy in Cambridge. Hardy eventually persuaded Ramanujan to join him in England, where they (often in collaboration with J. E. Littlewood) wrote a series of highly influential papers prior to Ramanujan's untimely death at the age of thirty-two.

*The Boy Who Dreamed of Infinity* starts with Ramanujan's infancy and focuses on his early life in India. It ends with his departure for England in 1914: "As he rocked on the steamer and gazed up at the great night sky, so full of stars that it looked like a glittering infinity, he never could have guessed that someday scientists would use his ideas to help explore that sky and that his work would change the course of mathematics forever."

The publisher describes the book as suitable for children aged 5–9 and this seems a reasonable recommendation. Most of the illustrations span two pages and the text is sparse but fluid. The attractive presentation and compelling story are sure to kindle the interest of curious young minds, who will want to know about the rest of Ramanujan's remarkable life story. Of independent interest is that the author is the daughter of the well-known mathematician George Andrews, who discovered Ramanujan's "Lost Notebook" in 1976.

*The Bookshelf* is prepared monthly by *Notices* Associate Editor Stephan Ramon Garcia.

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