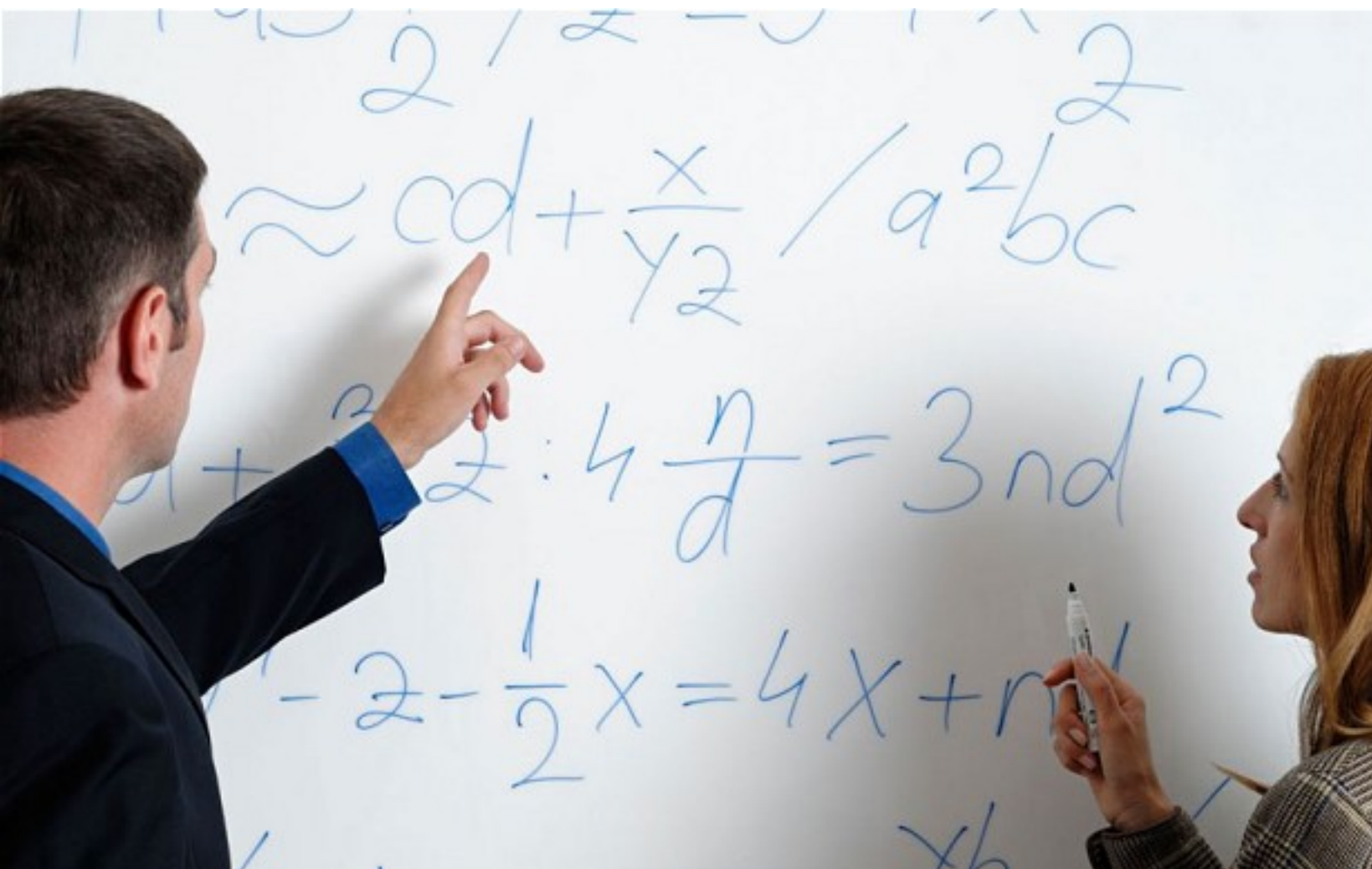


# The Joy of X: a Guided Tour of Mathematics, from One to Infinity by Steven Strogatz: review

For a brief but beautiful moment, Andrew Pettie understands calculus, reviewing *The Joy of X* by Steven Strogatz.

★★★★★



Maths made easy? Photo: Alamy

By Andrew Pettie

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As the title of this ingenious primer suggests, the sex appeal of mathematics is rising at an almost exponential rate. When I was at school, in the Eighties, the study of mathematics was still synonymous with the naff ties and dandruffed professors of the Open University. Today, the subject is the acme of fashion. In a bookshop I visited in the run-up to Christmas, it was virtually impossible to locate the shelves dedicated to sport, yet non-fiction books about maths and mathematicians crowded the display tables.

Richard Dawkins's successor as Oxford's Simonyi Chair for the Public Understanding of Science is a mathematician, Marcus du Sautoy, algebra's answer to Brian Cox. Even Hollywood is on board, producing films such as *A Beautiful Mind*, in which Russell Crowe played the brilliant but troubled

mathematician John Forbes Nash, and 2011's *Moneyball*, which told the story of how statistical analysis led to a revolution in baseball.

All of this has helped to restore mathematics to its rightful place in the popular consciousness as both sexy and significant. What it has not done, as far as I'm aware, is explain how Euclidean geometry, imaginary numbers and vector fields actually work. This is where Steven Strogatz enters the fray. Strogatz is a professor of applied mathematics at Cornell University. In 2010, he wrote a series of articles in *The New York Times* called *The Elements of Maths*. These 15 pieces introduced "maths' most compelling and far-reaching ideas" and now form the spine of this book. In other hands and on other subjects, books that spring from successful newspaper columns can be a structural disaster. Pithy arguments designed to last 1,500 words are soldered together to form a narrative arc lasting 50,000 or more. As a result, the reader either feels shouted at or seasick.

Here, however, the format works brilliantly because *The Joy of X*'s bite-size chapters can be read, chewed over and digested independently. If you're struggling with trigonometry, simply move on to sine waves. Your blurriness with one chapter won't diminish your chances of understanding the next.

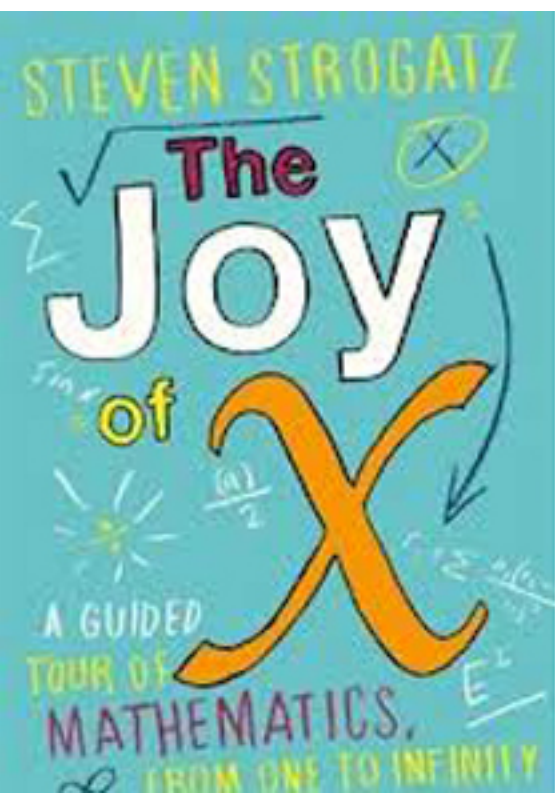
What also impresses is the author's ability to yoke together mathematical concepts that you studied at primary school with the kind of mind-bending phenomena that made my forehead yearn for a cold flannel. For instance, the first chapter opens with a reassuring discussion of a sketch from *Sesame Street* called "1, 2, 3 Count with Me". Yet within 50 pages you're tackling the square root of -1. By the end, volatility, risk and the "domestication of infinity" (what a phrase!) are in your sights.

Throughout, Strogatz exhibits a journalistic eye for startling facts and memorable illustrations. Not only is Euclid's *Elements* the most reprinted textbook of all time, Strogatz tells us, its style of address was also echoed by Thomas Jefferson in the Declaration of Independence, so that its radical conclusion – that the American colonies deserved the right of self-governance – might seem like the result of irrefutable logic. Later on, we meet the originator of the equals sign (=), the Tudor mathematician Robert Recorde, who writes that it is formed of two parallel lines because "no two things can be more equal". Strogatz also has a gift for applying mathematical methods to unlikely subjects, such as why a misunderstanding of probability confused both legal teams during the trial of O J Simpson, why you should spend precisely 37 per cent of your single life playing the field and how the tragedy of *Romeo and Juliet* can be predicted by plotting a graph of their fluctuating ardour using differential equations.

For me, *The Joy of X* proved the perfect maths lesson: lucid, illuminating and short. But it won't be for everyone: it is too cursory a gloss to be of great practical use to students, although there are extended

notes, more taxing conundrums and signposts to further reading at the back. Those with a fairly sophisticated knowledge might resent their hand being held quite so tightly.

However, if, like me, you have long gazed up at the snowy peaks of mathematics in mute awe, this book will get you to base camp. I can think of no higher praise for Strogatz's guide than to say that for a brief but beautiful moment – now sadly passed – it helped me to understand calculus.



The Joy of X: A Guided Tour of Mathematics, from One to Infinity

by Steven Strogatz

306pp, Atlantic, t £18

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