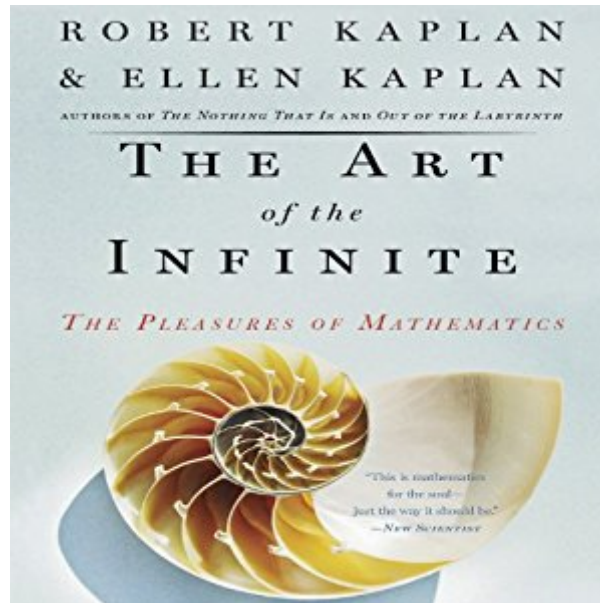


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# The Art Of The Infinite: The Pleasures Of Mathematics



## Synopsis

The Art of the Infinite takes infinity, in its countless guises, as a touchstone for understanding mathematical thinking. Robert and Ellen Kaplan guide us through the "Republic of Numbers," where we meet both its upstanding citizens and its more shadowy dwellers; and transport us across the plane of geometry into the unlikely realm where parallel lines meet. The journey is enriched by deft character studies of great mathematicians (and equally colorful lesser ones). And as we go deeper into infinity, we explore the most profound mystery of mathematics: Are its principles eternal truths that we discover? Or ones that we invent?

## Book Information

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## Customer Reviews

We all take our pleasures where we find them, and everyone is different, with different sources to draw upon. It will seem peculiar to many people that others could take pleasure in mathematics. Children usually learn to be bored or frightened by math, but there isn't any reason for this, other than incompetent teaching. As an attempt at remedy, husband and wife team Robert and Ellen Kaplan in 1994 began the Math Circle, Saturday morning sessions for kids who just wanted to find out more about mathematics. (The sessions were changed to Sunday morning when soccer practice interfered). Some kids (especially those who were pushed into the classes by their parents) dropped out, but some have come back, year after year, and the Kaplans have found that posing questions, inviting conjectures, asking for examples, and even suggesting ways towards proofs can be something children can enjoy. Mathematicians have been telling us for centuries about the beauty of the objects and systems that they have explored. The Math Circle seems to have taught math in a way to at least some kids who have caught the spirit of the quest for mathematical beauty.

In *The Art of the Infinite: The Pleasures of Mathematics* (Oxford University Press), the Kaplans have put some of those lessons into book form, concentrating on infinities of various kinds. This is a book for adults, or kids who hanker to think about math like adults ought to, but it is full of a sense of play. As you might expect, things start simple and get very complicated, and this is true right off in the first chapter, considering more and more complicated numbers. The Natural Numbers are introduced with patterns, as if you had stones to position on a table.

Here's human imagination at work. The flights of fancy the Kaplans show us are not about dragons and wizards, but about imaginary numbers, square roots, triangles, and infinite series. I bought this book to mine for ideas to use in the notes I am writing to accompany the Third Edition of *Geometry* by Harold Jacobs, and I struck a rich lode. My professional interests made me look at material of a more technical nature, such as the proof of the theorem of Pappus. Pappus noticed that if you take six points A, B, and C on one side of an angle and a, b, and c on the other side of this angle and join each point to the two points labeled by *different* letters, then the three points of intersection of these six segments lie on a straight line. I knew this as a fact since my high school days, but it is not easy to give a proof that is reasonable at that level. The Kaplans have a beautiful explanation of this result, putting it in context and giving a gentle proof. Very nice indeed. They have found just the right diagram or line of argument for many things I have seen before. Those of us who have suffered through the terrors of trigonometry will remember that there are some angle sum formulas, though we may not remember exactly what they are. The diagram at the top of page 187 tells you why these formulas are true and will make them unforgettable, if you decide to remember it. The path to this figure is made easy and natural in the book. What was new to me was the idea of adding a box around the tipped triangle --- suggested in the throw away line at the top of page 186. This gives us just what we need, neither too much nor too little.

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