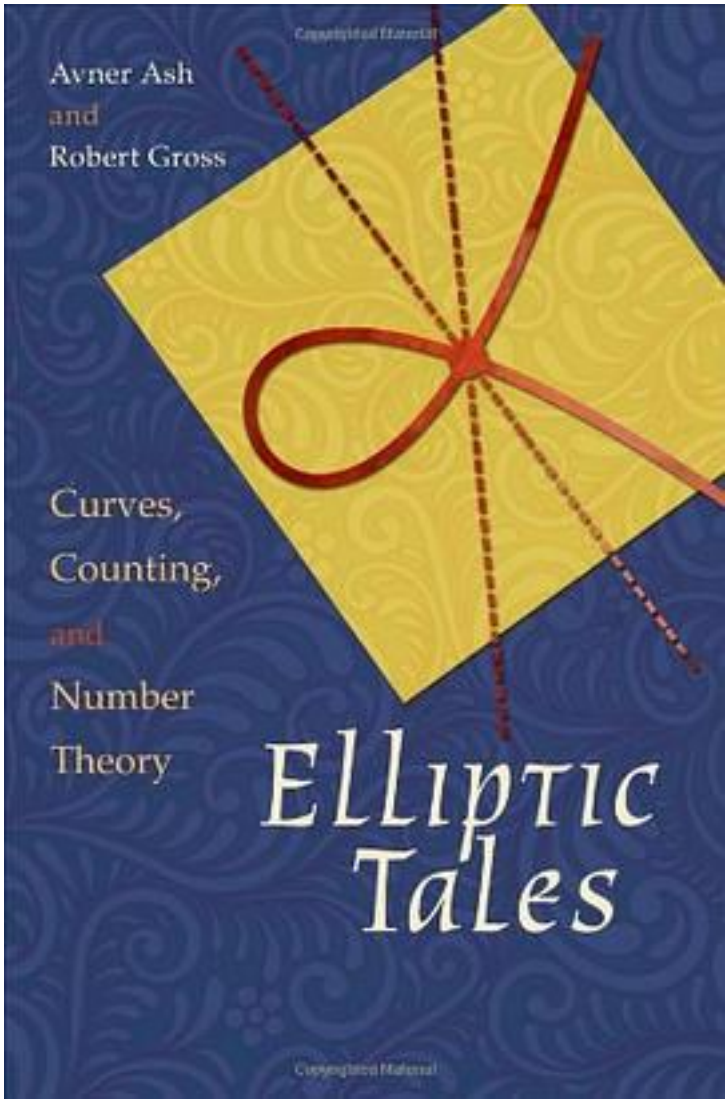
Elliptic Tales



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"Elliptic Tales" describes the latest developments in number theory by looking at one of the most exciting unsolved problems in contemporary mathematics - the Birch and Swinnerton-Dyer Conjecture. The Clay Mathematics Institute is offering a prize of $1 million to anyone who can discover a general solution to the problem. In this book, Avner Ash and Robert Gross guide readers through the mathematics they need to understand this captivating problem. The key to the conjecture lies in elliptic curves, which are cubic equations in two variables. These equations may appear simple, yet they arise from some very deep--and often very mystifying - mathematical ideas. Using only basic algebra and calculus while presenting numerous eye-opening examples, Ash and Gross make these ideas accessible to general readers, and in the process venture to the very frontiers of modern mathematics. Along the way, they give an informative and entertaining introduction to some of the most profound discoveries of the last three centuries in algebraic geometry, abstract algebra, and number theory. They demonstrate how mathematics grows more abstract to tackle ever more challenging problems, and how each new generation of mathematicians builds on the accomplishments of those who preceded them. Ash and Gross fully explain how the Birch and Swinnerton-Dyer Conjecture sheds light on the number theory of elliptic curves, and how it provides a beautiful and startling connection between two very different objects arising from an elliptic curve, one based on calculus, the other on algebra.

作者介绍:

Avner Ash is professor of mathematics at Boston College. Robert Gross is associate professor of mathematics at Boston College. They are the coauthors of Fearless Symmetry: Exposing the Hidden Patterns of Numbers (Princeton).

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