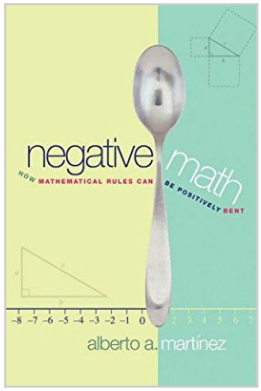

Negative Math: How Mathematical Rules Can Be Positively Bent

By Alberto A. Martínez

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A student in class asks the math teacher: "Shouldn't minus times minus make minus?" Teachers soon convince most students that it does not. Yet the innocent question brings with it a germ of mathematical creativity. What happens if we encourage that thought, odd and ungrounded though it may seem?

Few books in the field of mathematics encourage such creative thinking. Fewer still are engagingly written and fun to read. This book succeeds on both counts. Alberto Martinez shows us how many of the mathematical concepts that we take for granted were once considered contrived, imaginary, absurd, or just plain wrong. Even today, he writes, not all parts of math correspond to things, relations, or operations that we can actually observe or carry out in everyday life.

Negative Math ponders such issues by exploring controversies in the history of numbers, especially the so-called negative and "impossible" numbers. It uses history, puzzles, and lively debates to demonstrate how it is still possible to devise new artificial systems of mathematical rules. In fact, the book contends, departures from traditional rules can even be the basis for new applications. For example, by using an algebra in which minus times minus makes minus, mathematicians can describe curves or trajectories that are not represented by traditional coordinate geometry.

Clear and accessible, *Negative Math* expects from its readers only a passing acquaintance with basic high school algebra. It will prove pleasurable reading not only for those who enjoy popular math, but also for historians, philosophers, and educators.

Key Features:

- Uses history, puzzles, and lively debates to devise new mathematical systems
- Shows how departures from rules can underlie new practical applications
- Clear and accessible
- Requires a background only in basic high school algebra

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Editorial Review

From Publishers Weekly
It's a rare person who describes negative numbers (or any numbers) as "unassuming but fun," and he is likely the same person who would notice that negative numbers "stand as just about the only kind of numbers about which a book has not been written." That man is Martinez, and in this book, he touches on mathematics history and great mathematical squabbles about the "evident meaning" of negative numbers, all with the goal of sexing up negative numbers and proposing a "meaningful math" that could rekindle the "connection between mathematical truth and physical experience." No small feat, and the outcome is a qualified success: he writes with clarity and provides context (French novelist Henri Beyle resented the notion that two negatives make a positive) that helps layreaders to deal with abstruse subject matter, but many of his canny re-interpretations of mathematical laws depend on questionable means, such as rejiggering "the definition that we choose to give to the = sign." English majors who never understood why they were required to take math classes may enjoy Martinez's blend of humanism and philosophy, and number-people will certainly want to give this a look.

Review
It is fair to say that Negative Math completely blew my mind. . . . Martínez's superb writing makes even the most subtle arguments and paradoxes seem obvious, but don't expect this short book to be easy sailing. It will set your mind racing, although every page is absolutely worth the effort. -- Plus Magazine, University of Cambridge

this is a serious-minded and interesting book. . . . The first part of the book, which I enjoyed immensely, is a history of the struggles of mathematicians to cope with the idea of negative numbers. It is enormously encouraging . . . intriguing and provocative. . . -- The Mathematical Intelligencer

The author has committed himself to having this writing and this subject matter accessible to the general reader, and he has succeeded to a remarkable degree . . . For the teacher currently involved with these concepts, this innovative work should provide useful background and prove to be an outstanding read. -- The Mathematics Teacher

a book that is at once scholarly and readable . . . anyone with an interest in intellectual history would benefit . . . Martínez's book has the potential to cause the generation of many golden fibers that can be used in weaving the fabric of mathematics. -- Books & Culture

It is interesting and to a certain extent inspiring to look at this fundamental transformation of mathematics with the eyes of algebra and not as usual from the point of view of non-Euclidean geometry . . . whoever follows author will be inspired and forced to think about problems which he never put himself before. -- Zentralblatt MATH

"Alberto A. Martínez . . . shows that the concept of negative numbers has perplexed not just young students but also quite a few notable mathematicians. . . . The rule that minus times minus makes plus is not in fact grounded in some deep and immutable law of nature. Martínez shows that it's possible to construct a fully consistent system of arithmetic in which minus times minus makes minus. It's a wonderful vindication for the obstinate smart-aleck kid in the back of the class."--**Greg Ross,** ***American Scientist***

"Alberto Martinez . . . has written an entire book about the fact that the product of two negative numbers is considered positive. He begins by reminding his readers that it need not be so. . . . The book is written in a relaxed, conversational manner. . . . It can be recommended to anyone with an interest in the way algebra was developed behind the scenes, at a time when calculus and analytic geometry were the main focus of mathematical interest."**--James Case, *SIAM News***

"[*Negative Math*] is very readable and the style is entertaining. Much is done through examples rather than formal proofs. The writer avoids formal mathematical logic and the more esoteric abstract algebras such as group theory."**--*Mathematics Magazine***

From the Publisher
"An excellent book, truly readable and accurate. I repeatedly found myself intrigued and informed by Martínez's examples and approaches, which succeed in transforming competent historical analysis into an informative and thought-provoking meditation on mathematical meaning."--Joan L. Richards, Brown University

"Beautifully written. Accurate and reliable. The author's point, that mathematics is constructed according to our judgment of what will serve us, is very important and little understood."--Reuben Hersh, University of New Mexico

"Martinez writes with an accessible and conversational style. His discussion of the relationship of mathematics to physics and its role in the concrete features of the world makes this book attractive to general readers and academics alike."--Ronald Anderson, Boston College

Users Review

From reader reviews:

Philip Mejia:

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Jose Lloyd:

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