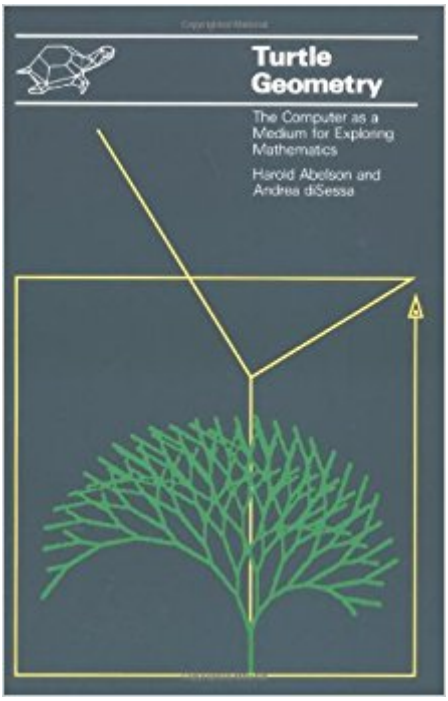
Turtle Geometry: The Computer As A Medium For Exploring Mathematics (Artificial Intelligence)



Synopsis

Turtle Geometry presents an innovative program of mathematical discovery that demonstrates how the effective use of personal computers can profoundly change the nature of a student's contact with mathematics. Using this book and a few simple computer programs, students can explore the properties of space by following an imaginary turtle across the screen.The concept of turtle geometry grew out of the Logo Group at MIT. Directed by Seymour Papert, author of Mindstorms, this group has done extensive work with preschool children, high school students and university undergraduates. Harold Abelson is an associate professor in the Department of Electrical Engineering and Computer Science at MIT. Andrea diSessa is an associate professor in the Graduate School of Education, University of California, Berkeley.

Book Information

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Average Customer Review: 4.6 out of 5 starsÂ Â See all reviewsÂ (12 customer reviews)

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Customer Reviews

I discovered this little gem of a book while exploring the stacks in the library when I was attending a local junior college back in the 80's. The author uses Logo's turtle graphics as a way of exploring the properties of geometric space. From very simple beginnings drawing regular polygons and other simple shapes, the book gradually works its way to more and more complicated scenarios. After exploring the properties of ordinary turtle graphics, turtle graphics are tried on the surfaces of spheres and cubes, then on more complicated surfaces. Little by little, concepts of non-Euclidean geometry are introduced, until the final chapters in which the turtle is used to demonstrate the

geometric nature of gravity in Einstein’s general theory of relativity.I strongly recommend this book to anyone with interests in computer programming, geometry and physics. The unusual approach this book takes to the understanding of curved space is deceptively simple and surprisingly powerful.

Turtle Geometry teaches mathematics and physics via the computer and the Logo programming language. The mathematics covered is pretty advanced, including topology, and general relativity. Yet, through the use of turtle geometry this advanced math and physics becomes accessible to the layperson. Although all of the examples are in the Logo programming language there are listings of Basic routines in the back of the book. With the help of the Basic routines I was able to easily translate the Logo/Basic code to the Python programming language which I choose to use for reading this book. The reviewers of this book mention it as the beginnning of a revolution in mathematics education. It seems though, that this revolution did not come about as computers are still not used very effectively in the classroom. I think this is very sad as the teaching approach used in Turtle Geometry could be very successful in the classroom.

I began working with this book in 1981 at the age of 15, using a Logo disk for the Apple II given to me by my sister’s friend who worked in the MIT AI lab. It is a gem of a book. The mathematical subjects are explained in a clear, easy, and entertaining way. I loved it at the time. No one told me to read it or to create the programs in the book. I did it out of curiosity inspired by the many interesting topics. Along the way I got a good foundation in vector algebra, 2d and 3d geometry, programming, and other things, all without effort.It is good for children or young adults who may later work in physics or vector graphics. I wish it was updated to use a modern language or a modern version of Logo. There is no other book that collects such a mixture of different subjects together. I still open the book to remember basic concepts and just for the joy of reading it again.As an adult I created several different 2d vector graphics systems for other programmers to use. I credit this book for my interest in that area.

Anyone interested in logo from beginners to advanced userswill benefit from reading this book. It has very easy andsimple to understand examples, along with a review, and questions at the end of every chapter. Some solutions are provided at the end of the book, (and their even correct, as opposed to many other text books I’ve read). The pace of the book gets gradually more difficulst, yet more interesting as you reach the climax at the end. A must read for anyone interested in

Mathematics.

Just an all around great book; interesting way to explore geometry, in a format that's easily understandable for both beginning & advanced students.

Mathematics presented in very easy-to-follow experiments. My only issue (and it's a small one) is that the examples are given in near-LOGO, not real-LOGO (in the books language, parameters don't start with colons, in real LOGO they do, that's the only real difference).

Everything you always wanted to know about Turtle Graphics. More, actually, than you thought there was to know. Sample code for algorithms. Also a section on implementing Turtle Graphics in other computer languages with source code.

This book really is a classic. For anyone considering integrating Computational Modeling into the STEM curriculum, the approach is exemplary. The content is both mathematical but also touches physics in a deep way (local geometry makes physics look simple). The pseudo-code in the book is somewhat old-fashioned but quite adequate for anyone with a programming background. The style of delivery follows Modeling-Based Instruction, which is quite amazing considering when it was written. The STEM world definitely needs this text to be upgraded to use the modern browser with WebGL and JavaScript.

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