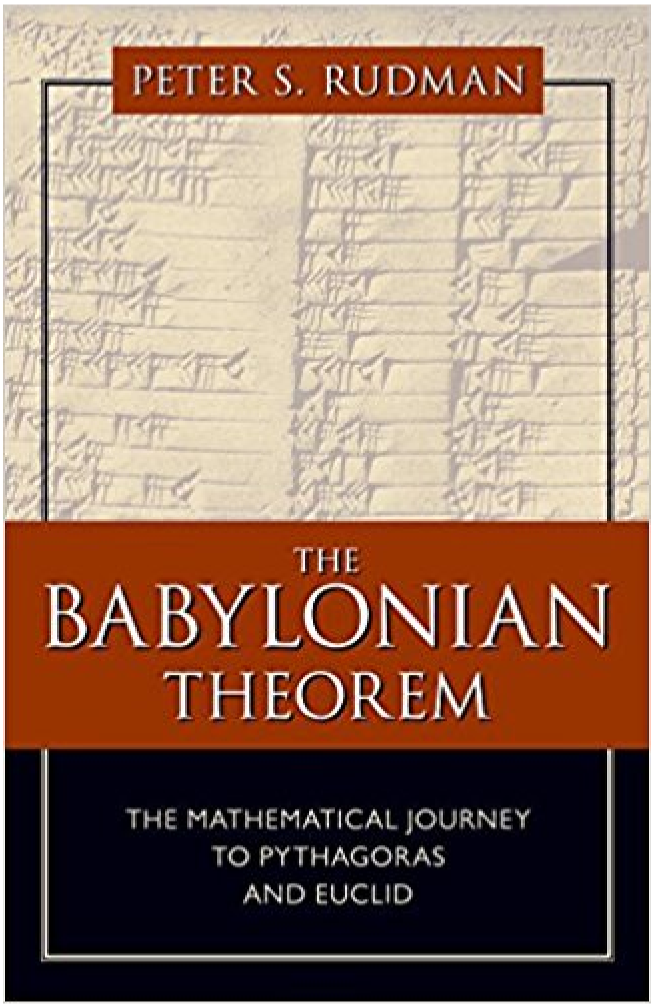
The Babylonian Theorem: The Mathematical Journey To Pythagoras And Euclid



Synopsis

A physicist explores the history of mathematics among the Babylonians and Egyptians, showing how their scribes in the era from 2000 to 1600 BCE used visualizations of plane geometric figures Ã Â to invent geometric algebra, even solving problems that we now do by quadratic algebra. Rudman traces the evolution of mathematics from the metric geometric algebra of Babylon and EgyptÃ¢â ¬â •which used numeric quantities on diagrams as a means to work out problemsÃ¢â ¬â •to the nonmetric geometric algebra of Euclid (ca. 300 BCE). From his analysis of Babylonian geometric algebra, the author formulates a "Babylonian Theorem", which he demonstrates was used to derive the Pythagorean Theorem, about a millennium before its purported discovery by Pythagoras.He also concludes that what enabled the Greek mathematicians to surpass their predecessors was the insertion of alphabetic notation onto geometric figures. Such symbolic notation was natural for users of an alphabetic language, but was impossible for the Babylonians and Egyptians, whose writing systems (cuneiform and hieroglyphics, respectively) were not alphabetic. This is a masterful, fascinating, and entertaining book, which will interest both math enthusiasts and students of history.

Book Information

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Customer Reviews

Peter S. Rudman (Tel Aviv, Israel), a retired professor of physics at the Technion-Israel Institute of Technology, is the author of How Mathematics Happened: The First 50,000 Years, which was selected in 2008 as an Outstanding Academic Text by the American Library Association.

Learn to change a rectangle into a square to construct it’s square root. If a rectangle has a unit length of x, (area = 1 times X = X square units) then the square of the same area has every side equal to the square root of x. The construction and proof of this is similar to the Pythagorean theorem. It seems that Pythagoras didn’t discover that the sum of the squares of the sides of a right triangle is equal to the square resting on the hypotenuse. It came from Babylonia long before, and who knows where Babylonia got it from. The real progress after the Babylonia theorem didn’t come till Euler. If you like this, then i recommend Euler’s Gem by Richeson. "The Babylonian Theorem" is a great book. Quick and Easy; Simple and Sweet.

This is a very good idea for a book and perhaps some day someone will do it right. Combining history and mathematics is a wonderful way of teaching students and I really wish that this book had been done right.I have to say that it got off to a fairly good start, with a good description of Egyptian and Babylonian number systems and an explanation for how they might have evolved. Although some of the related equations are not difficult to derive, I think that a quick derivation would have been helpful. I also would not have been able to figure out what a greedy algorithm was from the explanation given if I did not already know it, but these are relatively minor points.The problem comes when the author starts talking about what he calls the Babylonian Theorem mentioned in the title. He claims that the Babylonians knew how to prove the Pythagorean Theorem and he gives as justification a geometric diagram. Now the diagram does geometrically show that $(a-b)^2 + 4ab = (a+b)^2$, but I have hard time seeing how the Pythagorean Theorem follows, because the diagram contains no right triangles. There is a related diagram that can be used to prove the Pythagorean Theorem, but the author makes no reference to it, and I am not convinced that the Babylonians could have made use of it, because there is some algebraic manipulation required that they might not have been able to handle.Okay, so at the very least the author showed how the Babylonians came up with a way of solving a particular type of quadratic equation. The author then claims to show how this was used to solve problems. He gives the following problem from a Babylonian text: A number subtracted from its inverse is equal to 7. I was guessing that in modern terms this would be: $x - 1/x = 7$, though neither this or any other interpretation is presented. My interpretation must be incorrect because it is stated that the equation has an integer solution and you can tell by inspection that this will not be true for my equation. There is then shown how the Babylonian student solved the problem and I have no idea how the manipulations relate to the original problem.Later on, it is stated that Euclid proved the Babylonian Theorem using the Pythagorean Theorem. What is shown is a simple way of constructing a right triangle have a hypotenuse of (a+b) and a side of (a-b). Since there is a simple general method of constructing right triangles using straightedge and compass, I am not sure what this particular construction proves.I would strongly suggest that the author do some serious editing of the book, providing explanations. It may yet prove to be useful, but in its present form it is one big mess.

The Babylonian Theorem: The Mathematical Journey to Pythagoras and Euclid offers a fine sequel to HOW MATHEMATICS HAPPENED and comes from a physicist who explores the early history of math and how it was used to solve amazing problems. Illustrations from early Egyptian texts shows how math evolved and presents a ’Babylonian Theorem’ which he shows was used to drive the Pythagorean Theorem. College-level math and science collections especially will find this an intriguing math analysis.

A terrible book that dismisses the last 25 years of research in the field Babylonian mathematics in an oft-hand manner. Its one good point is that acknowledges the sophistication of Babylonian mathematics.

Classic Parks Enuma Elish (2 Volumes in One): The Seven Tablets of Creation; The Babylonian and Assyrian Legends Concerning the Creation of the World and of Mankind The Cambridge Ancient History, Volume 3, Part 2: The Assyrian and Babylonian Empires and Other States of the Near East, from the Eighth to the Sixth Centuries BC