Verification Of Pythagoras Theorem By Paper Cutting

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Was Pythagoras Chinese? : An Examination of Right Triangle Theory in Ancient China Springer Science & Business Media

Proofs without words are generally pictures or diagrams that help the reader see why a particular mathematical statement may be true, and how one could begin to go about proving it. While in some proofs without words an equation or two may appear to help guide that process, the emphasis is clearly on providing visual clues to stimulate mathematical thought. The proofs in this collection are arranged by topic into five chapters: Geometry and algebra; Trigonometry, calculus and analytic geometry; Inequalities; Integer sums; and Sequences and series. Teachers will find that many of the proofs in this collection are well suited for classroom discussion and for helping students to think visually in mathematics.

Five Thousand B.C. and Other Philosophical Fantasies Courier Corporation

A collection of paradoxes, dialogues, problems, and essays discusses aspects of philosophy, including the natures of reality, truth, existence, and death

The 'Zhou Bi Suan Jing' Princeton University Press

A plain-English guide to the basics of trig Trigonometry deals with the relationship between the sides and angles of triangles... mostly right triangles. In practical use, trigonometry is a friend to astronomers who use triangulation to measure the distance between stars. Trig also has applications in fields as broad as financial analysis, music theory, biology, medical imaging, cryptology, game development, and seismology. From sines and cosines to logarithms, conic sections, and polynomials, this friendly guide takes the torture out of trigonometry, explaining basic concepts in plain English and offering lots of easy-to-grasp example problems. It also explains the "why" of trigonometry, using real-world examples that illustrate the value of trigonometry in a variety of careers. Tracks to a typical Trigonometry course at the high school or college level Packed with example trig problems From the author of Trigonometry Workbook For Dummies Trigonometry For Dummies is for any student who needs an introduction to, or better understanding of, high-school to college-level trigonometry.

Its Demonstrations Analyzed and Classified, and Bibliography of Sources for Data of the Four Kinds of Proofs John Wiley & Sons

Pythagoras, a famous Greek scholar, sathematician, and philosopher, formulated a proof for a theorem that is named for him—the Pythagorean theorem. This theorem states that in any right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides. The Pythagorean theorem for right-angled triangles likely was known long before the time of Pythagoras. It was probably used by the ancient Egyptians to construct the pyramids. The theorem is quite believable without rigorous proof to anyone willing to expend a modest effort in some experimentation. One method is to draw a number of right-angled triangles in as wide a variety as practicable and measure all of the sides. It will be determined that, for each triangle drawn, the square of the length of the side opposite the right angle is about equal to the sum of the lengths of the squares of the other two sides. Another method requires the availability of a balance. For this more interesting experiment, construct a right-angled triangle and a square on each side using a piece of sheet metal or cardboard. Then cut out the three squares and weigh them on the balance. The square on the hypotenuse should balance the other two. Contained within this book are some rigorous proofs and some interesting perspectives regarding right angles and right-angled triangles. Doubtless, this theorem is one of the most useful concepts in mathematics.

The Metaphysics of the Pythagorean Theorem The Mathematical Association of America

In this delightful book, Levi turns math and physics upside down, revealing how physics can simplify proofs and lead to quicker solutions and new theorems, and how physical solutions can illustrate why results are true in ways lengthy mathematical calculations never can.

Verification Or Proof Prometheus Books

Like masterpieces of art, music, and literature, great mathematical theorems are creative milestones, works of genius destined to last forever. Now William Dunham gives them the attention they deserve. Dunham places each theorem within its historical context and explores the very human and often turbulent life of the creator — from Archimedes, the absentminded theoretician whose absorption in his work often precluded eating or bathing, to Gerolamo Cardano, the sixteenth-century mathematician whose accomplishments flourished despite a bizarre array of misadventures, to the paranoid genius of modern times, Georg Cantor. He also provides step-by-step proofs for the theorems, each easily accessible to readers with no more than a knowledge of high school mathematics. A rare combination of the historical, biographical, and mathematical, Journey Through Genius is a fascinating introduction to a neglected field of human creativity. “It is mathematics presented as a series of works of art; a fascinating lingering over individual examples of ingenuity and insight. It is mathematics by lightning flash.” —Isaac Asimov

In which Coloured Diagrams and Symbols are Used Instead of Letters for the Greater Ease of Learners LAPA Uitgewers

Like its predecessor, Proofs without Words, this book is a collection of pictures or diagrams that help the reader see why a particular mathematical statement may be true and how one could begin to go about proving it. While in some proofs without words an equation or two may appear to help guide that process, the emphasis is clearly on providing visual clues to stimulate mathematical thought. The proofs in this collection are arranged by topic into five chapters: geometry and algebra; trigonometry, calculus and analytic geometry; inequalities; integer sums; and sequences and series. Teachers will find that many of the proofs in this collection are well suited for classroom discussion and for helping students to think visually in mathematics.

A 4,000-Year History American Mathematical Soc.

An exploration of one of the most celebrated and well-known theorems in mathematics By any measure, the Pythagorean theorem is the most famous statement in all of mathematics. In this book, Eli Maor reveals the full story of this ubiquitous geometric theorem. Although attributed to Pythagoras, the theorem was known to the Babylonians more than a thousand years earlier. Pythagoras may have been the first to prove it, but his proof—if indeed he had one—is lost to us. The theorem itself, however, is central to almost every branch of science, pure or applied. Maor brings to life many of the characters that played a role in its history, providing a fascinating backdrop to perhaps our oldest enduring mathematical legacy.

Dissections Cambridge University Press

Originally, my intention was to write a "History of Algebra", in two or three volumes. In preparing the first volume I saw that in ancient civiliza tions geometry and algebra cannot well be separated: more and more sec tions on ancient geometry were added. Hence the new title of the book: "Geometry and Algebra in Ancient Civilizations". A subsequent volume on the history of modem algebra is in preparation. It will deal mainly with field theory, Galois theory and theory of groups. I want to express my deeply felt gratitude to all those who helped me in shaping this volume. In particular, I want to thank Donald Blackmore Wagner (Berkeley) who put at my disposal his English translation of the most interesting parts of the Chinese "Nine Chapters of the Art of Arith metic" and of Liu Hui's commentary to this classic, and also Jacques Se siano (Geneva), who kindly allowed me to use his translation of the re cently discovered Arabic text of four books of Diophantos not extant in Greek. Warm thanks are also due to Wyllis Bandler (Colchester, England) who read my English text very carefully and suggested several improve ments, and to Annemarie Fellmann (Frankfurt) and Erwin Neuenschwan der (Zurich) who helped me in correcting the proof sheets. Miss Fellmann also typed the manuscript and drew the figures. I also want to thank the editorial staff and production department of Springer-Verlag for their nice cooperation.

70 Proofs of the Pythagorean Theorem Dr. Sidney J. Kolpas

The Pythagorean TheoremA 4,000-Year HistoryPrinceton University Press

The Essence of Mathematics Through Elementary Problems Springer Science & Business Media

The theory of elliptic curves involves a blend of algebra, geometry, analysis, and number theory. This book stresses this interplay as it develops the basic theory, providing an opportunity for readers to appreciate the unity of modern mathematics. The book’s accessibility, the informal writing style, and a wealth of exercises make it an ideal introduction for those interested in learning about Diophantine equations and arithmetic geometry.

Long Walk to Freedom Little, Brown

Hul persoonlikhede knoop en skuur behoorlik - sy, die opsters gravinnetjie, en hy, die boertige bywoner. Maar meer as 'n herinnering kan Isabelle nie word nie, want Arendt de Leeuw het net 'n paar maande oor.

The Proof Springer Science & Business Media

Vol. 2 of a monumental 4-volume set covers mathematics and the physical world, mathematics and social science, and the laws of chance, with non-technical essays by eminent mathematicians, economists, scientists, and others.

A Math Adventure Courier Corporation

In this sequel to his award-winning How Mathematics Happened, physicist Peter S. Rudman 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 how plane geometric figures could be partitioned into squares, rectangles, and right triangles to invent geometric algebra, even solving problems that we now do by quadratic algebra. Using illustrations adapted from both Babylonian cuneiform tablets and Egyptian hieroglyphic texts, Rudman traces the evolution of mathematics from the metric geometric algebra of Babylon and Egypt-which used numeric quantities on diagrams as a means to work out problems-to the nonmetric geometric algebra of Euclid (ca. 300 BCE).Thus, Rudman traces the evolution of calculations of square roots from Egypt and Babylon to India, and then to Pythagoras, Archimedes, and Ptolemy. Surprisingly, the best calculation was by a Babylonian scribe who calculated the square root of two to seven decimal-digit precision. Rudman provocatively asks, and then interestingly conjectures, why such a precise calculation was made in a mud-brick culture.From his analysis of Babylonian geometric algebra, Rudman formulates a Babylonian Theorem, which he shows 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.Rudman intersperses his discussions of early math conundrums and solutions with Fun Questions for those who enjoy recreational math and wish to test their understanding. The Babylonian Theorem is a masterful, fascinating, and entertaining book, which will interest both math enthusiasts and students of history.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.

The Pythagorean Theorem Springer Science & Business Media

This monograph considers several well-known mathematical theorems and asks the question, “Why prove it again?” while examining alternative proofs. It explores the different rationales mathematicians may have for pursuing and presenting new proofs of previously established results, as well as how they judge whether two proofs of a given result are different. While a number of books have examined alternative proofs of individual theorems, this is the first that presents comparative case studies of other methods for a variety of different theorems. The author begins by laying out the criteria for distinguishing among proofs and enumerates reasons why new proofs have, for so long, played a prominent role in mathematical practice. He then outlines various purposes that alternative proofs may serve. Each chapter that follows provides a detailed case study of alternative proofs for particular theorems, including the Pythagorean Theorem, the

Fundamental Theorem of Arithmetic, Desargues' Theorem, the Prime Number Theorem, and the proof of the irreducibility of cyclotomic polynomials. Why Prove It Again? will appeal to a broad range of readers, including historians and philosophers of mathematics, students, and practicing mathematicians. Additionally, teachers will find it to be a useful source of alternative methods of presenting material to their students.

Pythagoras Using Transformations Birkhäuser

One of the most important mathematical theorems is named after Pythagoras of Samos, but this semi-mythical Greek sage has more to offer than formulas. He is said to have discovered the numerical nature of the basic consonances and transposed the musical proportions to the cosmos, postulating a "harmony of the spheres." He may have coined the words "cosmos" and "philosophy." He is also believed to have taught the doctrine of transmigration of souls and therefore to have advised a vegetarian diet. Ancient legends have Pythagoras conversing with dogs, bears, and bulls. A distinctly Pythagorean way of life, including detailed ritual regulations, was observed by his disciples, who were organized as a secret society. Later, Pythagorean and Platonic teachings became fused. In this Platonized form, Pythagoreanism has remained influential through medieval Christianity and the Renaissance down to the present. Christoph Riedweg's book is an engaging introduction to the fundamental contributions of Pythagoras to the establishment of European culture. To penetrate the intricate maze of lore and ascertain what history can tell us about the philosopher, Riedweg not only examines the written record but also considers Pythagoras within the cultural, intellectual, and spiritual context of his times. The result is a vivid overview of the life and teachings of a crucial Greek thinker and his most important followers.

A Commentary on the First Book of Euclid's Elements Springer Science & Business Media

This classic text, written by a distinguished mathematician and teacher, focuses on a fundamental theory of geometry. Topics include all types of Pythagorean triangles.

The Heritage of Thales Penguin Books

Although we all remember the Pythagorean Theorem from our school days, not until you read this book will you find out about the marvelous treasures this most famous mathematical concept holds. In an easily understood manner, the author entertains us with the wonders surrounding this theorem. This is the sort of treatment that will help popularize mathematics!-Charlotte K. Frank, PhD, SVP, research and development, McGraw-Hill Education, The McGraw-Hill CompaniesUsing the familiar Pythagorean theorem as the main theme the authors show the power and beauty of mathematics as we would have perhaps wished to have seen it when we were first introduced to this ubiquitous theorem in our school days. This book is a must read for anyone with even a small interest in mathematics.-Daniel Jaye, principal, Bergen County Academies, Hackensack, NJThe first time I have enjoyed anything about mathematics.-Bob Simon, 60 Minutes CorrespondentNot only is this book a very valuable resource for mathematics teachers, but it is also a book that can convince the general public that there is genuine beauty in mathematics. Perhaps this book will help bring 'converts' to mathematics!-Dr. Anton Dobart, director general, Austrian Ministry for Education, Art and CultureIt is often overheard in academic environments that 'math is'fun!' This little book on the Pythagorean theorem is surely proof enough, especially since, like the theorem, the fun is on almost every page.-Leon M. Lederman, Nobel laureateThe Pythagorean theorem may be the best-known equation in mathematics. Its origins reach back to the beginnings of civilization, and today every student continues to study it. What most nonmathematicians don't understand or appreciate is why this simply stated theorem has fascinated countless generations.In this entertaining and informative book, veteran math educator Alfred S. Posamentier makes the importance of the Pythagorean theorem delightfully clear.He begins with a brief history of Pythagoras and the early use of his theorem by the ancient Egyptians, Babylonians, Indians, and Chinese, who used it intuitively long before Pythagoras's name was attached to it.He then shows the many ingenious ways in which the theorem has been proved visually using highly imaginative diagrams. Some of these go back to ancient mathematicians; others are comparatively recent proofs, including one by the twentieth president of the United States, James A. Garfield.After demonstrating some curious applications of the theorem, Posamentier then explores the Pythagorean triples, pointing out the many hidden surprises of the three numbers that can represent the sides of the right triangle (e.g, 3, 4, 5 and 5, 12, 13). And many will truly amaze the reader.He then turns to the Pythagorean means (the arithmetic, geometric, and harmonic means). By comparing their magnitudes in a variety of ways, he gives the reader a true appreciation for these mathematical concepts.The final two chapters view the Pythagorean theorem from an artistic point of view-namely, how Pythagoras's work manifests itself in music and how the Pythagorean theorem can influence fractals.Posamentier's lucid presentation and gift for conveying the significance of this key equation to those with little math background will inform, entertain, and inspire the reader, once again demonstrating the power and beauty of mathematics!Alfred S. Posamentier, Ph.D. (New York, NY), is dean of the School of Education and professor of mathematics education at The City College of the City University of New York. He has published more than 40 books in the area of mathematics and mathematics education, including The Fabulous Fibonacci Numbers, Pi: A Biography of the World's Most Mysterious Number, and Math Charmers: Tantalizing Tidbits for the Mind.

The Pythagorean Theorem Eight Classic Proofs American Mathematical Soc.

A comprehensive, beautifully illustrated survey accessible to anyone familiar with high school geometry.

Astronomy and Mathematics in Ancient China WestBow Press

This is a study and translation of the Zhou bi suan jing, a Chinese work on astronomy and mathematics that reached its final form around the first century AD. The author provides the first easily accessible introduction to the developing mathematical and observational practices of ancient Chinese astronomers and shows how the generation and validation of knowledge about the heavens in Han dynasty China related closely to developments in statecraft and politics. This book will be fascinating reading for scholars in the history of science, Chinese history, and astronomy.