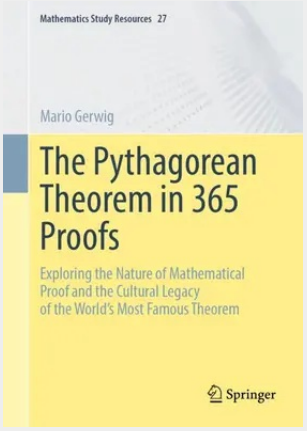
Gerwig

The Pythagorean Theorem in 365 Proofs

Exploring the Nature of Mathematical Proof and the Cultural Legacy of the World's Most Famous Theorem



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This book presents about 365 different proofs of the Pythagorean Theorem in a highly visual and accessible form, while also placing the theorem and its wide variety of proofs into both a mathematical and cultural context. Here, the theorem becomes a model for the discoveries of ancient mathematics, showing how mathematical truths build upon one another. The collection also gives students a unique insight into the methods of mathematics and its deductive structure.

The collection of proofs is based on the work of Elisha Scott Loomis (1852–1940), who gathered, systematized, and published hundreds of algebraic and geometric proofs. His work became a crystallization point for the intellectual and cultural history of mathematics, exemplarily condensed in the Pythagorean theorem. After more than 80 years, the is now published again in a thoroughly revised and expanded edition.

This book is a translation of the original German edition by Mario Gerwig, published by Springer-Verlag GmbH Germany in 2021. It omits a chapter from the original edition that was tailored primarily to educational contexts in German-speaking countries. The translation was done with the help of artificial intelligence. The author has subsequently revised the text further in an endeavour to refine the work stylistically. Nevertheless, the book might read stylistically different from a conventional translation.

From the foreword by the (NCTM):
May this volume inspire teachers to bring the wonder of the Pythagorean Theorem to their students with renewed clarity and enthusiasm. And may it remind us all that even the most familiar theorems still hold surprises, inviting us to look again, reason again, and delight again in the power of mathematics.

From the foreword by Prof. Günter M. Ziegler (President of , Germany):
This book presents a great variety of proofs for a very specific, interesting and fascinating statement – from a historical source, expertly and critically commented. There is much to learn from this book: Learn about the variety of proofs, be inspired by them and take pleasure in them.

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