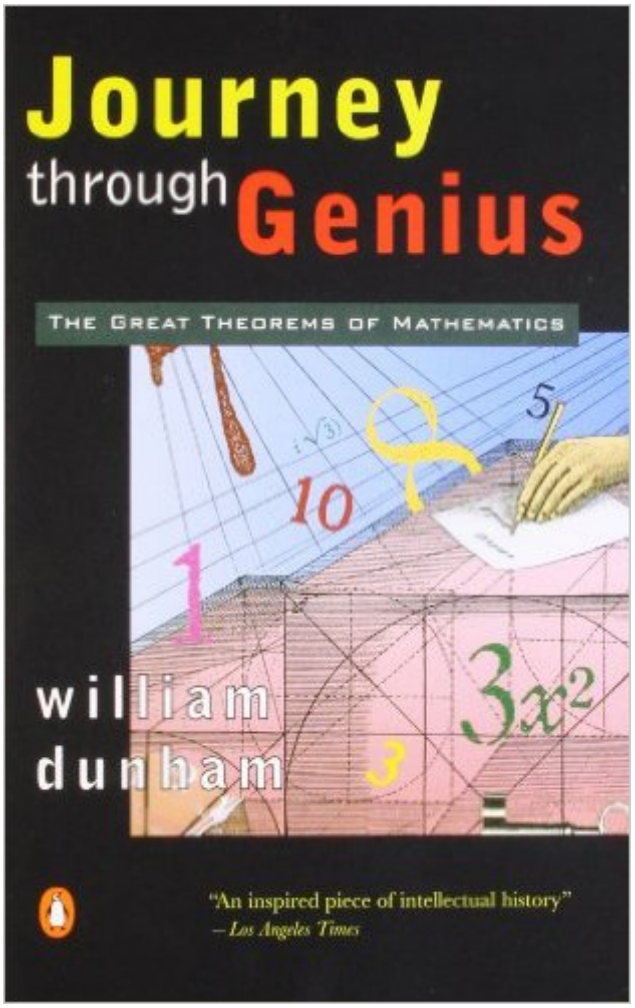
Journey Through Genius: The Great Theorems Of Mathematics



Synopsis

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 â ” 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.

Book Information

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Customer Reviews

Some books, such as Ball’s and Beiler’s seem to have sparked a life-long love of mathematics in practically everyone who reads them. "Journey Through Genius" should be another such book.In the Preface, the author comments that it is common practice to teach appreciation for art through a study of the great masterpieces. Art history students study not only the great works, but also the lives of the great artists, and it is hard to imagine how one could learn the subject any other way. Why then do we neglect to teach the Great Theorems of mathematics, and the lives of their creators? Dunham sets out to do just this, and succeeds beyond all expectations.Each chapter

consists of a biography of the main character interwoven with an exposition of one of the Great Theorems. Also included are enough additional theorems and proofs to support each of the main topics so that Dunham essentially moves from the origins of mathematical proof to modern axiomatic set theory with no prerequisites. Admittedly it will help if the reader has taken a couple of high school algebra classes, but if not, it should not be a barrier to appreciating the book. Each chapter concludes with an epilogue that traces the evolution of the central ideas forward in time through the history of mathematics, placing each theorem in context.The journey begins with Hippocrates of Chios who demonstrated how to construct a square with area equal to a particular curved shape called a Lune. This "Quadrature of the Lune" is believed to be the earliest proof in mathematics, and in Dunham’s capable hands, we see it for the gem of mathematics that it is.

Dunham has done an excellent job of taking us through the history of mathematics providing a context with the civilization of the time. He shapes his production around what he considers to be the great theorems of mathematics.The order of presentation is chronological. Early on we see great admiration for Euclid and his "Elements" as two of Euclid’s theorems appear on the list, a proof of the Pythagorean theorem and the proof that there are infinitely many primes. Euler and Cantor are also honored with two theorems included among the collection.However there is more to Dunham’s presentation than just the proofs. We find other related results by these masters and other great mathematicians that were their contemporaries. He shows reverence for Newton. Gauss and Weierstrass and others are mentioned but none of their theorems are highlighted.It is not his intention to slight these great mathematicians. Rather, Dunham’s criteria seems to be to present the theorems that have simple and elegant proofs but often surprising results. His coverage of Cantor is particularly good. It seems that he is most knowledgeable about Cantor’s mathematics of transfinite numbers and the related axiomatic set theory.For a detailed description of the chapters in this work, look at the detailed review by Shard here at . I found this book to be well written and authoritative and learned a few things about Euler and number theory that I hadn’t known from my undergraduate and graduate training in mathematics. Yet I did not give the book five stars.There are a couple of omissions that I find reduce it to a four star rating. My main objection is the slighting of Evariste Galois.

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