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THE FIRST RESOURCE FOR MATHEMATICS

Dunham, William

A mathematician's scrapbook. Highlights and surprises from across a career. (English)

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Cham: Birkhäuser (ISBN 978-3-031-81417-4/pbk; 978-3-031-81418-1/ebook). xiv, 161 p. (2026).

During his career, the author came across some mathematical issues, like problems or solutions or just facts that have surprised him or triggered his attention. That can be an unexpected or counter-intuitive result, some little known historical fact, a particularly nice proof, etc. He has collected then in a folder he called 'Neat Math'. This book collects 25 elementary topics from this folder. There are of course some (prime) number problems. He shows that Euclid's proof of the fact that there are infinitely many prime numbers is not exactly the one that is often attributed to him in the present literature. Euclid's original proof and many alternative proofs are given. Some are based on surprising ideas. Some other topics: Who was the first to formulate the twin prime conjecture? Who was the originator of what we now call Newton's iteration formula? The nonsense of numerological arguments, like for example to define π from the Bible text. Different proofs for summing the harmonic series. Who was Charlotte Scott, and was Anna Pell Wheeler married to a Russian double agent? How to measure the isoscele-ness of a triangle and which one is the least isoscele? What mathematics can support a magic trick, and why does mathematics deserves a place within the curricula of humanities?

The book is very entertaining and aiming at a broad readership, even though there are many proofs, but also the mathematically skilled reader will be as surprised as the author by several of the stories.

Reviewer: Adhemar Bultheel (Leuven)

MSC:

00A05 Mathematics in general
01A05 General histories, source books
01A50 History of mathematics in the 18th century
01A60 History of mathematics in the 20th century

Keywords:

prime numbers; Basel problem; infinite series; max-min problems; Emma Noether; Alexander Pell; triangular inequalities; regular solids

Biographic references:

Euclid of Alexandria; Erdős, Paul; Newton, Isaac; Ramanujan, Srinivasa; Euler, Leonhard; Morley, Frank

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