New and Noteworthy Titles on our Bookshelf
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The Shape of a Life
One Mathematician's Search for the Universe's Hidden Geometry
by Shing-Tung Yau and Steve Nadis

The Shape of a Life is an autobiogra-phy of Shing-Tung Yau, winner of the 1982 Fields Medal and many other prestigious awards. The book is coauthored with science writer and Discover contributing editor Steve Nadis, who previously collaborated with Yau in 2010 on the popular science book The Shape of Inner Space: String Theory and the Geometry of the Universe’s Hidden Dimensions. Although there is no explicit mathematics in the book, the writing style is clear enough that the mathematically literate reader will be able to understand, at an intuitive level, the stunning breakthroughs and remarkable discoveries that Yau and his collaborators contributed to.

The Shape of a Life is an interesting and engaging read, written in a detailed yet lively style. The book vividly documents Yau’s trials as a desperately poor child in Hong Kong; his unlikely path to the UC Berkeley graduate program; his deteriorating relationship with his doctoral advisor, Shing-Shen Chern; the development of geometric analysis; the discovery of Calabi-Yau manifolds; and more.

The Shape of a Life maintains an appropriate pace, never dragging its feet nor skipping important details. Yau is always frank and forthright. He has strong opinions and does not hesitate to share them. Whether one agrees with him or not, one must conclude that The Shape of a Life is a deeply personal reflection that provides a keen insight into the life and mind of one of the world’s top mathematicians.

99 Variations on a Proof
by Philip Ording

This entire book is devoted to 99 proofs, liberally interpreted, of the following statement: “If $x^3-6x^2+11x-6 = 2x-2$, then $x=1$ or $x=4$.” It seems improbable that one could write more than a few pages on such a modest topic, but Ording has managed to parlay this simple question into a perceptive reflection on mathematics and its culture. Students and professors alike will enjoy this unusual book.

The inspiration for 99 Variations on a Proof comes from Raymond Queneau’s Exercises in Style, a 1947 work that retells the same story in 99 strikingly different ways. The book is divided into 99 short chapters, each of which explores a different “proof” of the main result. The word “proof” here appears in quotes since most would not pass muster in an undergraduate course. Each comes with a short parenthetical description. For example, Proof 36 (Social Media) appears in the form of a fictitious tweet by Girolamo Cardano: “Cube & 9 times first power equals 6 times square & 4 solved by reduction to @delferro’s equation arxiv.org/abs/4307.1160 #cubic #tartaglia”. Some approaches seem uncomfortably familiar, such as Proof 44 (Omitted with Condescension): “There is a simply beautiful theorem which provides all solutions of the equation $x^3-6x^2+11x-6 = 2x-2$. Alas, any further explanation would deny you the satisfaction of discovering it on your own…” and Proof 94 (Authority): “Of course, if $x^3-6x^2+11x-6 = 2x-2$, then it follows from Euler that the real number in question must be 1 or 4.” There are also some serious mathematical proofs, graphical proofs, proofs by experiment, and several unique expositions that demonstrate a great deal of artistry. For example, there are proofs in dialogue form and doggerel, along with screenplays and blog entries. Fittingly, the book ends with Proof 99 (Prescribed): “The proof is left to the reader.”