

Book Reviews

This document is devoted to brief reviews/recommendations of books dealing with topics in mathematics, science, and philosophy.

Kiselev's Geometry: Book 1. Planimetry, by A. P. Kiselev, translated and adapted from Russian by Alexander Givental (Sumizdat, 2006):

This high school geometry text (targeted for year 7 – 9 and 240 pages in length), translated recently from Russian to English, has a very long history. First published in 1892, it has gone through a multitude of Russian revisions and it survived the 1917 Revolution and the rule of Communism. Kiselev's gift as a Master teacher is revealed in four ways: (1) he is precise, (2) he explains concepts simply, (3) he *knows* the topic, and (4) he understands and teaches the deep beauty of geometry as a structure. The author also understands the connection between geometry and invention (exemplified in its applications to the physics of wave motion and its use by engineers), geometry and history (including the great geometers of history from Ancient Greece to the modern era), and geometry and the nature of mathematical reasoning. This is an excellent text, not only for students, but also for teachers who would like to learn how to teach geometry from a master. I plan to use many of his ideas to augment the Geometry text written by the American Master teacher Harold R. Jacobs. Denoted as "Planimetry" (Plane Geometry or Plane measure), I eagerly await the translation and publication of Book 2 entitled "Stereometry" (Solid Geometry or Solid measure).

Calculus: A Liberal Art (2nd edition), by William McGowen Priestley (Springer-Verlag, [1974] 1998):

Priestley's work is a gem in that it incorporates the full-orbed liberal arts approach to the calculus. Professor Priestley places the differential and integral calculus in the context of history (the best methodology for teaching any aspect of mathematics). You will also find a good number of brain-expanding exercises and real world applications strategically placed in the text. This book is a "must-have" text for any teacher of mathematics and for a student who desires to understand the calculus in the context of history, science, philosophy, and literature. This is education at its best!

Calculus Made Easy (revised 1998 edition), by Silvanus P. Thompson and Martin Gardner (St. Martin's, 1998):

This book, first published in 1910 under the pseudonym of F. R. S. (Fellow of the Royal Society), was reprinted three more times *before the end of 1910*. In the years since, it has sold over one million copies *and has never been out of print*. Thompson, a fellow in the Royal Society of London, wrote numerous technical manuals many of which went through several editions. A devout Quaker, he also wrote popular biographies of Michael Faraday, Philipp Reis, and Lord Kelvin. He wrote this masterpiece to show that understanding the principles of differential and integral calculus is not as difficult as the words imply. He once said, "Considering how many fools can calculate, it is surprising that it should be thought either a difficult or a tedious task for any other fool to learn to master the same tricks." In an era when calculus textbooks often contain close to one thousand pages (with a concomitant number of frightening exercises!) and prices now ranging between \$100 and \$200 per copy, this book, at a "little bit" of that cost, will teach you to master every essential principle of the calculus. In my reading and survey of the academe, I have been relatively surprised to discover the dearth of competent calculus teachers. Thompson is a master teacher who enjoys teaching the subject (a rare breed indeed). Morris Kline, another master teacher recommended this book to give a high school student who wants to learn

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calculus. Martin Gardner, a master mathematics expositor in his own right, has revised the text by adding three new chapters, modernized the language and methods throughout, and added an appendix of challenging and enjoyable practice problems. Add this classic to your “to do” study list and you will be richly rewarded.

The Impulse of Power: Formative Ideals of Western Civilization (*the hero • philosophy • asceticism • hierarchy • reason • the new man • nature • revolution*), by Michael W. Kelley (Contra Mundum Books, 1998):

By inference, the majority of mathematics history books are written by mathematicians and most mathematicians are notoriously poor philosophers. Hence, their writing of mathematics history is governed primarily by the analysis of the history of mathematical techniques. This is not wrong in itself and it needs to be done. And, when mathematics historians do interface with philosophical issues, their starting point is rarely a Christian one. The importance of this book by Kelley is that it covers the same ground that is covered in mathematics history books (e.g., the Ancient Greeks, Medieval Christianity, the Scientific Revolution, etc.) but with the astute analysis of a Christian philosopher who understands presuppositional starting points. This means that by reading this book you will understand, for example, where mathematics fits into the world view thinking (i.e., rationalism) of the ancient Greeks. With this understanding, you will not only be better able to make sense of the mathematical accomplishments of the ancient Greeks, but you will be able to reinterpret these accomplishments in the context of a consistent Biblical Christian world view. In addition, this book is replete with telling insights about why our modern world is the way it is. This book is a must read for leaders who want to better understanding the nature and fruit of ideas (both Biblical and non-Biblical).

Mathematics in a Postmodern Age: A Christian Perspective, edited by Russell W. Howell & W. James Bradley (Eerdmans, 2001):

In 1977, the Association for Christians in the Mathematical Sciences (A.C.M.S.) began holding yearly conferences with the purpose of investigating and discussing Christian perspectives on mathematics. This book reflects some of the conclusions reached at these conferences. Several authors contributed to the essays organized by the editors and they are Paul Zwier of Calvin College, Glen VanBrummelen of Bennington College, Christopher Menzel of Texas A&M University, William Dembski of Baylor University, Calvin Jongsma of Dordt College, James Bradley of Calvin College, Michael Veatch of Gorton College, Russell Howell of Westmont College, Scott VanderStoep of Hope College, and David Klanderma of Trinity College. This book is a serious and somewhat technical (in places) study of (1) the nature of mathematics, (2) the influence of mathematics in history, and (3) the place of the Christian perspectives in the understanding and teaching of mathematics. The importance of presuppositional analysis is discussed at several points in the text, but all of the authors (including every Christian mathematics professor) would do well to study the writings of Cornelius Van Til in order to sharpen their analytical and philosophical wits. I especially enjoyed the chapter entitled “God and Mathematical Objects” where the author investigates ontological issues. William Dembski’s essay entitled “The Possibility of Detecting Intelligent Design” is fascinating and the three chapters surveying the history of mathematics helps one get a grip on the place of mathematics in the world view of the postmodern age.

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Overall, this book unveils many fresh and interesting perspectives and it will stir you think about mathematics with a Christian mind.

The Applicability of Mathematics as a Philosophical Problem, by Mark Steiner (Harvard University Press, 1998):

This is a highly technical analysis by a Jewish mathematician investigates the philosophical problems generated by the applicability of mathematics to physics. It is very difficult to account for what Steiner calls the “user friendliness” of the universal scheme of things in terms of the reigning ideology of scientific naturalism (the view that nature constitutes a closed system of causes that is devoid of miracle, teleology, or any “mindlike” superintendence). Steiner refuses to posit the Biblical God as the answer to this quandary, but he does a great job of exposing of thorny philosophical issues (in the context of some technical mathematics). This is a powerful study and well worth the mind-stretching it requires to digest it.

Truth and the Transcendent: The Origin, Nature, & Purpose of Mathematics, by Larry L. Zimmerman (Answers in Genesis, 2000):

In my understanding of the Biblical world view as it applies to mathematics, I am grateful to two people: (1) Vern S. Poythress and (2) Larry Zimmerman, the author of this 72 page book (format: 8.5 by 11). Zimmerman, a veteran high school mathematics teacher from Portland, Oregon, packs a lot into this short text. He covers five topics: (1) The unity of mathematics, (2) the connection between mathematics and the natural sciences, (3) mathematics as a universal language, (4) the nature of mathematics, and (5) the purpose of mathematics. By profusely documenting his points, he will lead you into several years of study in the “footnote trail.” He also sharply and justifiably criticizes the varied watered-down approaches that Christian organizations, colleges, and universities make in their failure to embrace a distinctively Biblical Christian perspective on mathematics. By all means, buy, read, and study this book.