

# BOOK REVIEWS

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*The Beginnings and Evolution of Algebra* edited by I. Bashmakova and G. Smirnova (English translation by A. Shenitzer), published by the Mathematical Association of America, 2000, Dolciani Series Number 23. ISBN 0-88385-329-9, softcover, 176 pages, \$24.95 (U.S.). Reviewed by **Edward J. Kansa**, *Embry-Riddle Aeronautical University, Oakland, CA, USA*.

This is a delightful history of algebra from the ancient Babylonians to the major developments in the 19th century, with a brief summary of the advances in the 20th century. It is not intended to be a textbook. The reader who has an introductory knowledge of algebra with applications to engineering and scientific problems can easily comprehend the first part of this book. Later portions focus on nineteenth century developments when algebra evolved into the more abstract realm of rings, groups, fields, etc.

The authors view the evolution of algebra in the following stages:

1. Ancient Babylonian numerical algebra,
2. Ancient Greek geometric algebra and the transformation into abstract theoretical science,
3. The birth of literal algebra from the beginning of the common era,
4. Algebra in the Middle Ages in the Arabic and European communities,
5. Algebraic achievements in Europe (cubic and quintic equations, calculus, indeterminate and determinate equations),
6. Algebraic developments in the 17th and 18th centuries (Descartes and Gauss, solutions with radicals, proof on unsolvability of the general quintic equation),
7. The theory of algebraic equations (group theory, Galois theory, etc.)
8. Modern Algebra (fields, commutative algebras, etc.)
9. Linear and noncommutative algebra (linear equations, matrices, symbolic algebra, algebras).

In summary, this reviewer highly recommends this book for a fascinating study of the history of algebra. The authors do not burden the reader with excessive details, but do cite the relevant literature. The volume is a valuable resource for those who are interested in the evolution of algebra throughout the ages.