al-Khwārizmī


The text of Al-Khwārizmī’s Algebra is established from the known mss. and translated into French. In the Introduction, the author traces the development of the treatment of quadratic equations from the Greek geometric algebra of Euclid II by Arab language mathematicians and points out the important shift in emphasis achieved by Al-Khwārizmī’s algebraic approach. He notes that Al-Khwārizmī could not have had access to the Indian texts of Aryabhaṭa and Brahmagupta since the latter freely use negative numbers while Al-Khwārizmī carefully remains in the positive domain prescribed by the Greeks. Since the book has turned its author’s name into a mathematical concept, it is required reading for every student of the history of mathematics.

Al-Khwārizmī’s book has two parts. The first one, the algebra proper, teaches manipulation of polynomials up to degree 2 and the complete solution of linear and quadratic equations. The second part teaches the use of linear equations to accountants and lawyers, exemplified by problems expressed as testamentary dispositions. Looking at the “worksheets” provided by the U.S. Internal Revenue Service for the computation of one’s taxes, one sees that such a text would still be useful today if it would be read by the intended audience. The book ends, as always with the author’s editions, with an Arabic-French glossary of usages particular to text, in this case augmented by a glossary exploring the usages in Gerard of Cremona’s Latin translation. The glossary would be more useful if in the case of verbs with multiple meanings the required construction would be indicated. For example, the word atā “to come” is used on p. 107 both in the sense of “to come from a starting point” (min) and “to come to a desired result” (alā). It is completely correct to translate the first in educated French as parvenir and the second as achever, but on a more elementary, lexicographic level the first is venir de and the second venir à.

Reviewer: H. Guggenheimer (West Hempstead)

MSC:
01A30 History of mathematics in the Golden Age of Islam
01-02 Research exposition (monographs, survey articles) pertaining to history and biography

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Biographic references:
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