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Andersen, Kirsti (ed.) (Andersen, I.; Garm, K.; Holth, K.; Tafteberg Jakobsen, I.; Mejlbo, L.)

Sources and comments to the history of equations. (Kilder og kommentarer til ligningernes historie). (Dutch)

DK-7100 Vejle: Forlaget TRIP. 251 p.; DKr 135.00 (1986).

The book is written in Danish and consists of excerpts from central sources with mathematical and historical commentary, intended for use in the gymnasium. The "history of equations" is covered through the following periodization:
1. Babylonian mathematics, explaining apart from the techniques of problems of the 1st, 2nd and 3rd degree the fundamental computational techniques, and interpreting the material much the same way as van der Waerden's Science Awakening.
2. Greek "geometric algebra", covering mostly Elements II and possible application for constructions, and once again interpreted much as in Science Awakening.
3. Genuine Greek algebra, viz. Hero and (mostly) Diophantus.
4. The beginnings of Islamic algebra: al-Khwārizmī and Abū Kāmil.
5. al-Khayyāmī's geometric solution to the equation of the third degree.
6. The beginnings of Latin algebra: Fibonacci (represented through the "purchase of a horse" and two second degree equations) and Jordanus de Nemore, whose De numeris datis is however misrepresented historically (it is claimed to have been used as a textbook for 400 years), stylistically (changing translations of the same term makes of Jordanus a fuzzy writer) and mathematically (the translation takes results for initial conditions, reading "erit" ("will be") as "sit" ("let be").
7. Equations of the third and fourth degree in the 16th century (Cardano and Viète).
8. Descartes' theory of equations in La géométrie, concentrated on the reduction of equations through use of known roots, and on the possible number of roots.
9. The way toward contemporary formalism, exemplified briefly from Newton's algebraic lectures and an early 19th century Danish textbook.
10. A final chapter summarizes the basic results on the algebraic solvability of equations of the 2nd through the fifth degree.
All source excerpts are provided with exercises.

J.Høyrup

Keywords : History of equations; algebra. Greek algebra; Islamic algebra; Latin algebra; Jordanus de Nemore; Cardano; Viète
Classification :
∗01A05 General histories, source books
01-01 Textbooks (history)
00Bxx Conference proceedings and collections of papers