Preface

The years following 2000 B.C. and the years preceding A.D. 1600 mark two important turning points in the development of algebra. The first witness the solution of equations and systems of the first and second degrees; to the second is associated the solution of the third- and fourth-degree equations, which are also the last in which the unknown may be expressed by means of a general formula. The years between these two turning points also saw the successive extensions of the number system: confined initially to the positive integers and fractions, it next came to include positive irrational numbers; then, towards the end of the Middle Ages, negative numbers made a timid appearance, and this was followed a little later by the first use of complex numbers.

This book does not aim to give an exhaustive survey of the history of algebra up to early modern times, but merely to present some significant steps in solving equations and, wherever applicable, to link these developments to the extension of the number system. Various examples of problems, with their typical solution methods, are analyzed, and sometimes translated completely. Indeed, it is another aim of this book to ease the reader's access to modern editions of old mathematical texts, or even to the original texts; to this end, some of the problems discussed in the text have been reproduced in the Appendix in their original language (Greek, Latin, Arabic, Hebrew, French, German, Provençal, and Italian) with explicative notes.

Bibliographical references have been restricted to the particular subjects considered. General information may be found in classical textbooks on the history of mathematics, such as K. Vogel's *Vorgriechische Mathematik II*, Hannover/Paderborn 1959 (Mesopotamian mathematics), T. Heath's two-volume *History of Greek mathematics*, Oxford 1921 (reprinted), M. Cantor's four-volume *Vorlesungen über Geschichte der Mathematik*, Leipzig 1900–13 (reprinted), J. Tropfke's seven-volume *Geschichte der Elementar-mathematik in systematischer Darstellung*, Leipzig 1921–24 and (vol. 1-4 only) 1930–40.

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