
First Course in Algebra

Fite William Benjamin

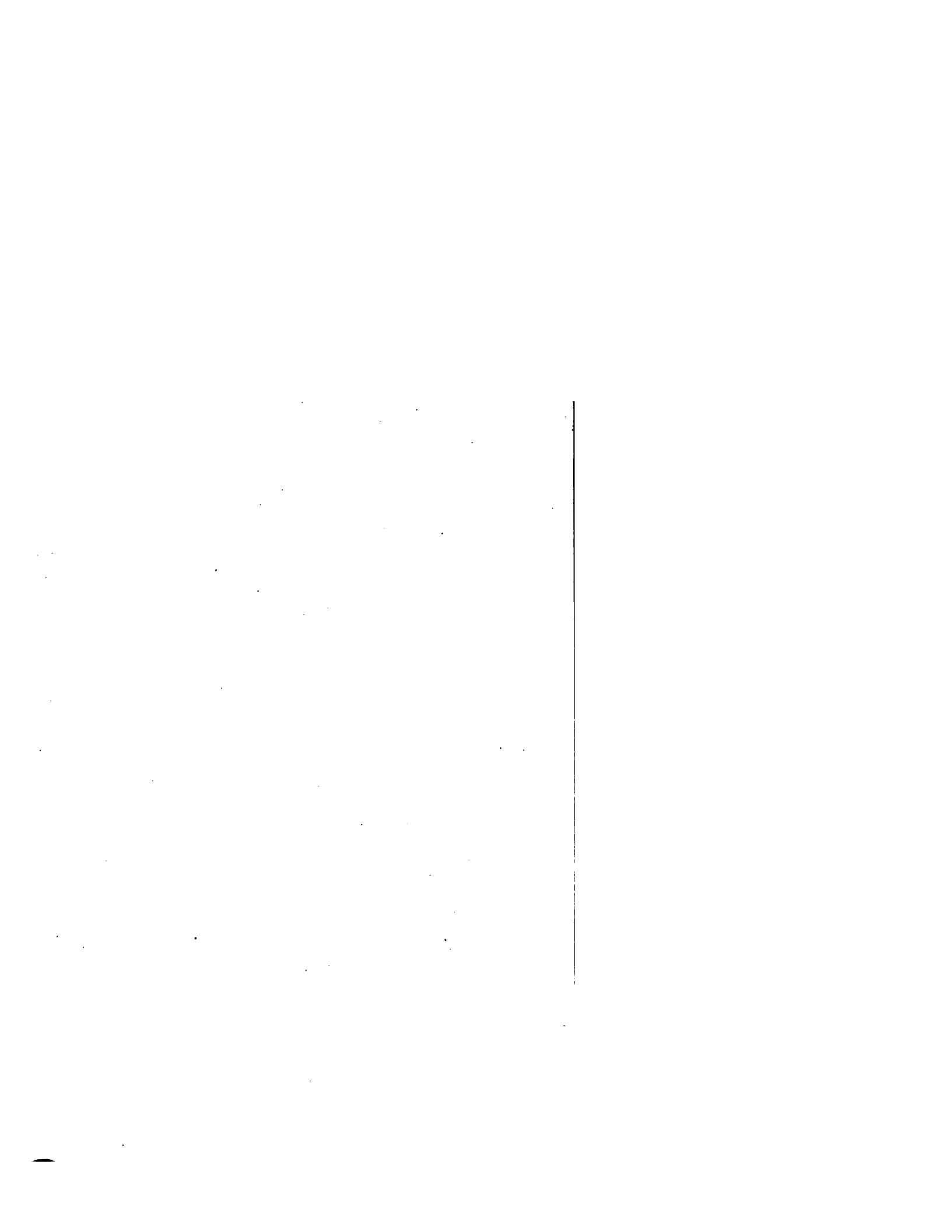
Title: First Course in Algebra

Author: Fite William Benjamin

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FIRST COURSE IN ALGEBRA

BY

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REVISED

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PREFACE

ALGEBRA is essentially a body of principles by the aid of which we can discover the information implicitly given in certain kinds of statements. These statements are for the most part descriptions of numbers and can be expressed in the form of equations. It is the function of a text-book in elementary algebra to show the student how he can use these principles in identifying numbers thus described.

The present book is the result of an attempt to embody this conception of algebra in a form suitable for first-year high school pupils. Everything has accordingly been made subordinate to the equation and the solution of problems.

In carrying out this general plan an effort has been made to present the subject in as informal a way as possible. For example, it is said that an equation in one unknown is a description of a number. This is not to be understood as a definition of an equation. It is far from that. But the statement is made because it sets forth clearly and informally what is for the student of elementary algebra the essential feature of an equation. It tells him more about equations and why he is studying them than a precise definition would.

Many new problems will be found in the book, together with some old ones in new forms. The informational problems serve to relate the subject to geometry, physics, and everyday life.

The notion of the abscissa of a point is an extremely simple one, and effective use can be made of it to bring out the close connection between algebra and geometry.

The use of graphical methods has been explained as fully as seemed advisable in a book for beginners. Nothing has been said of the loci of equations of higher than the first degree. Some of these will be explained in the Second Course.

The order of topics has been determined on the obvious principle that the simpler ones should come first. Thus, no reference is made to negative numbers until Chapter III, after the student has acquired a certain degree of familiarity with the algebraic notation. The history of the slow introduction of these numbers into mathematics indicates the inherent difficulty of the subject and warns us against putting it before the student while he is adjusting himself to the new and strange literal notation. Such subjects as fractions and division by polynomials are placed later than usual because of their formal difficulties.

The discussion of imaginary numbers has been left to the Second Course. These numbers cannot be treated adequately in a beginner's book, and it seemed better therefore to omit them altogether.

Some problems which are too difficult for the average student have been inserted in order to afford opportunity to the brighter students to exercise their powers.

There is sufficient material in the body of the book for a full year's course. Certain special topics which are required by the Regents of the State of New York are given in the appendix. They will also be given in the Second Course.

The diagram on page 111 is a record of temperatures taken at the meteorological observatory of the United States Weather Bureau in Central Park, New York City, and was furnished through the kindness of Mr. James H. Scarr, the district forecaster.

A number of high school teachers of long experience in various parts of the country have read the proof sheets carefully and critically, and I have had the benefit of their suggestions in making the final revision. These suggestions were

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especially valuable in enabling me the better to adapt the book to the needs of first-year pupils.

Professors W. B. Carver of Cornell University, H. E. Cobb of Lewis Institute, Chicago, and P. R. Dean of the Curtis High School, New York City, read the manuscript and made many suggestions which have been of great value to me.

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NEW YORK CITY.**



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