

A FIRST COURSE IN HIGHER ALGEBRA

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A first course in higher algebra by Helen A. Merrill & Clara E. Smith

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HELEN A. MERRILL & CLARA E. SMITH

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A FIRST COURSE
IN
HIGHER ALGEBRA

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TO
JAMES PIERPONT
A WISE AND INSPIRING TEACHER
THIS ATTEMPT TO LEAD YOUNG STUDENTS
ALONG PATHS OF MATHEMATICAL KNOWLEDGE
WHICH HE HAS MADE PLEASANT FOR US
IS GRATEFULLY DEDICATED

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PREFACE

THIS book is an outgrowth of the conviction of the authors that Higher Algebra, to be worthy of the name, must employ advanced methods, and that the method which chiefly marks advanced work in analysis is that of limits. In all but a few chapters the work is based upon limits, the proofs being made as rigorous as seems advisable for immature students, with occasional comment on points where the proof is not rigorous, or where theorems not yet proved are employed. It is our hope that there is nothing to be unlearned in later work.

The ordinary Algebra course in college covers a semester's work — about forty-five class appointments. It has been found by actual use that in this time Chapters III, IV, V, VI, VII, XII can be covered, while Chapter X has been taught in connection with a course in Trigonometry. The chapters on Rational and Irrational Numbers are intended for reference rather than for detailed study, while the chapters on Permutations, Combinations and Probability, Partial Fractions, Complex Numbers, and Integration may be substituted for other chapters as subjects of study, or serve for reference in later work.

No mathematical knowledge is presupposed beyond the usual course in Elementary Algebra, except that a knowledge of the meaning of the trigonometric tangent is assumed in § 105, while in Chapter XI anything beyond the simplest treatment of the complex number