$\text{l} \text{ and } \dfrac{a(1+r)}{(1-r)^2}.$

$\text{d } \dfrac{(b+a)r-ar^2}{(1-r)^2}.$

$i+5.$

$-(n-1)(n-2)''.$

$6);$

$-1.$

$\dfrac{3\cdot 5}{5\cdot 8}x^4 - \text{etc.}$

$\dfrac{i-3}{2i}x^i.$

$\dfrac{1}{x^i}.$

$m-1].$

$-3m) + \text{etc.}$

$\dfrac{\ldots i+2}{\cdot 3\ldots i}\dfrac{a^i}{b^{i+3}}\Big)$

$2) + \ldots\Big).$

HINTS ON A COURSE IN ADVANCED ALGEBRA.

For the benefit of students who may contemplate a course of reading in the various branches of Advanced Algebra, the following list of subjects and books has been prepared. As a general rule, the most extended and thorough treatises are in the German Language, while the French works are noted for elegance and simplicity in treatment.

To pursue any of these subjects to advantage, the student should be familiar with the Differential Calculus.

I. THE GENERAL THEORY OF EQUATIONS.—In English, TOD-HUNTER'S is the work most read.

SERRET, *Algèbre Supérieure*, 2 vols., 8vo, is the standard French work, covering all the collateral subjects.

JORDAN, *Théorie des Substitutions et des Équations Algébriques*, 1 vol., 4to, is the largest and most exhaustive treatise, but is too abstruse for any but experts.

II. DETERMINANTS—BALTZER, *Theorie der Determinanten*, is the standard treatise. There is a French but no English translation. A recent English work is ROBERT F. SCOTT, *The Theory of Determinants and their Applications in Analysis and Geometry*.

III. THE MODERN HIGHER ALGEBRA, resting on the theories of Invariants and Covariants.

SALMON, *Lessons introductory to the Modern Higher Algebra*, is the standard English work, and is especially adapted for instruction.

CLEBSCH, *Theorie der binären Algebraischen Formen*, is more exhaustive in its special branch and requires more familiarity with advanced systems of notation.

IV. THE THEORY OF NUMBERS. There is no recent treatise in English. GAUSS, *Disquisitiones Arithmeticæ*, and LEGENDRE, *Théorie des Nombres*, are the old standards, but the latter is rare and costly. LEJEUNE DIRICHLET, *Vorlesungen über Zahlentheorie*, is a good German Work. There is also a chapter on the subject in SERRET, *Algèbre Supérieure*.

V. SERIES.—This subject belongs for the most part to the Calculus, but CATALAN, *Traité élémentaire des Séries*, is a very convenient little French work on those Series which can be treated by Elementary Algebra.

VI. QUATERNIONS.—TAIT, *Elementary Treatise on Quaternions*, is prepared especially for students, and contains many exercises. The original works of HAMILTON, *Lectures on Quaternions* and *Elements of Quaternions*, are more extended, and the latter will be found valuable for both reading and reference.