

The functions y_a become here

$$y_0 = \sum_{h_2} \vartheta_2^{h_2} x_0 = x_0 + x_2; \quad y_1 = \sum_{h_1} \vartheta_1^{h_1} x_0 = x_1 + x_3.$$

Now both y_0 and y_1 are zero; they are thus not cyclic, and the rule breaks down.

Finally we observe that the treatment in Chapters X. and XII. of Kronecker's problem, of finding the necessary and sufficient form of the roots of all algebraically solvable equations of prime degree n , is far too condensed for so abstruse a matter. It is also lacking in rigor in two essential points. The question whether the functions

$$\psi_\mu = \sum_{r=0}^{n-1} \omega^{\mu r} x_r \quad (\omega^n = 1)$$

vanish or whether the functions

$$y_q = \psi_{g^q} \psi_{g^{q-1}} \quad (q = 1, 2, \dots, n-1)$$

are distinct is not discussed.

Before closing we beg to have it clearly understood that our criticisms have been made on the supposition that the volume in hand is to serve as an introduction to the modern theory of the algebraic solution of equations. To one who is already familiar with the elements of this theory, the present work will give much interesting and valuable information, particularly in regard to the methods peculiar to Kronecker. It may then serve in some measure as a preparation toward studying the papers of this great master.

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YALE UNIVERSITY,
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ELEMENTS OF THE CALCULUS.

The Elements of the Differential and Integral Calculus, based on the *Kurzgefasstes Lehrbuch der Differential- und Integralrechnung*, von W. Nernst und A. Schönflies. By J. W. A. YOUNG and C. E. LINEBARGER. New York, D. Appleton and Co., 1900. 8vo., xvii + 410 pp.

OF the various new text-books on the calculus, this recent joint publication by a teacher of mathematics and a teacher of physics and chemistry will doubtless attract much interest, based as it is upon the German work, intended primarily for chemists, which appeared in 1896