normal to a point (x, y, z) on the surface is given by an expression of the form

$$d^2 + Ax^2 + By^2 + \cdots,$$

in which A and B are constants and the omitted terms are of the third order at least, and that when the given point is not a principal center of curvature the coefficients A and B do not vanish. If, however, the given point be a principal center of curvature, A or B will vanish and an examination of the sign of the non-vanishing coefficient will easily yield the first three theorems.

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ON THE SOLUTION OF ALGEBRAIC EQUATIONS IN INFINITE SERIES.

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I. *Introduction.*

The purpose of this paper is to present a general method for determining all the roots of any algebraic equation by means of infinite series. The method consists in forming three algebraic functions of x from the given equation

$$(1) \qquad f(y) = 0,$$

(a) by introducing a factor x into all the terms of (1) except the first and last;

(b) by introducing a factor x into all the terms of (1) except the first and second;

(c) by introducing a factor x into all the terms of (1) except the second and last.

These algebraic functions are expanded into power series in x by Laplace's series. If in these power series x is made unity, the resulting series, if convergent, determine the roots of the given equation. It will be shown that all the roots of the given equation can be expressed in infinite series derived either from the algebraic function formed in accordance with (a), or from the two algebraic functions formed in accordance with (b) and (c). The method presupposes the solution of the two-term equation