Various modifications of Theorem III may easily be secured. For example, in case we make the additional assumptions that the function $f(x, y)$ is bounded and is measurable in y for each x, then the set $\mathfrak{E}$ may be replaced by the interval (a, b). These additional assumptions are fulfilled in particular if f is bounded and Borel measurable on the square where it is defined. In this case the function $g(x, x)$ is Borel measurable on (a, b). As another modification we may substitute for the square $a \leqq x \leqq b$, $a \leqq y \leqq b$, a bounded measurable set $\mathfrak{E}_0\mathfrak{E}_0$, consisting of those points of the plane having x and y each in a linear measurable set $\mathfrak{E}_0$. Then the integral is understood to be taken over those points of the interval (a, x) contained in $\mathfrak{E}_0$.

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A GENERAL THEORY OF REPRESENTATION OF FINITE OPERATIONS AND RELATIONS*

BY B. A. BERNSTEIN

Let a mod n denote the least positive residue modulo n of an integer a, i. e., the least positive integer obtained from a by rejecting multiples of n. Consider the polynomials modulo a prime p

$$(1) \qquad a_0 + a_1 x + \cdots + a_{p-1}x^{p-1}, \quad \text{mod } p,$$

$$(2) \qquad f_0(x) + f_1(x)y + \cdots + f_{p-1}(x)y^{p-1}, \quad \text{mod } p,$$

where in (1) a_i are least positive p-residues and x ranges over the complete system of least positive p-residues, and where (2) is a polynomial modulo p in y whose coefficients $f_i(x)$ are modular polynomials in x of form (1). In a previous paper† I developed a theory of representation of abstract

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* Presented to the Society, San Francisco Section, October 25, 1924.

† PROCEEDINGS OF THE INTERNATIONAL MATHEMATICAL CONGRESS, TORONTO, 1924.