265. Ira Rosenbaum: *A method of determining the number n correlated with the given truth table of an arbitrary q-ary function in m-valued logic.*

In a previous paper, 1-1 correlation formulae were obtained between the numbers $1, 2, \cdots, m^{m^q}$ and the truth-tables of the m^{m^q} distinct q-ary truth-functional modes of propositional combination of m-valued logic. In the present paper a formula is given for proceeding in the reverse direction, that is, from the given truth-table of an arbitrary q-ary function to the number n correlated with that table. The original simple procedure for going from a given table to the number n associated with it lacked analytical representation. W. V. Quine suggested that this procedure was analogous to transforming the expression for an integer in the m-ary scale of notation into one in the denary scale of notation. This suggestion led to the following result. Let the m^q truth values in the given table be $V_1, V_2, \cdots, V_{m^q}$. From each of these values subtract one to obtain the values $W_1, W_2, \cdots, W_{m^q}$. The latter values are integers x of the range $0 \leqq x \leqq m-1$ rather than, like the V's, of the range $1 \leqq x \leqq m$. Hence the sequence of W's may be regarded as representing in the m-ary scale of notation an integer n. The mode of representation is indicated by the formula $n-1 = \sum_{j=0}^{c-1} W_{c-j} \cdot m^{c-1-j}$ in which $c = m^q$. (Received February 20, 1947.)

Statistics and Probability

266. Z. W. Birnbaum: *Probabilities of sample-means for bounded random variables.*

Lower bounds are given for the probabilities $P(|\overline{X}_n| \geqq t)$, where $t \leqq a$, $\overline{X}^n = (1/n)\sum_{j=1}^{n} X_j$, and $X_1, X_2, \cdots, X_n$ is a sample of a continuous random variable with a probability density $f(X)$ such that: $f(X) = f(-X)$, $f(|X|)$ is a nonincreasing function of $|X|$, and $f(X) = 0$ for $|X| \geqq a$. (Received March 21, 1947.)

Topology

267. Felix Bernstein: *A lattice color problem.* Preliminary report.

The points of the lattice L of all points with coordinates which are integers or are centers of the elementary squares of L are considered as the regions of a color problem. In a partial set S two points A and B are called neighbors if AB does not contain another point of S and if the distance AB is equal either to 1 or to $2^{1/2}/2$ or to $2^{1/2}$. The number of colors required in order that two neighbors may be colored differently is obviously 5 or less. It is shown that 5 colors are necessary. For the proof two methods are used. The one method is based on the studying of color schemes at certain conveniently chosen boundaries in the manner introduced by G. D. Birkhoff. The other method is based on the study of the effect of the "centers" on the coloring of the total neighborhood. The efficiency of each method varies with the nature of the given configuration. (Received March 22, 1947.)

268. R. H. Bing: *A homogeneous indecomposable plane continuum.*

An example is given of a homogeneous bounded nondegenerate continuum which is not a circle. This answers the following question raised by Knaster and Kuratowski in Fund. Math. vol. 1 (1920) p. 223: If a nondegenerate bounded plane continuum is