

ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THE SOCIETY

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume. Cross references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

152. V. W. Adkisson: *Plane peanian continua with homeomorphisms extendable in the sense of Antoine.*

Let M be a peanian continuum which lies in a plane S , has a finite number of cut points of power greater than 2, and does not separate S . Let M' be any topological map of M in a plane S' . The following conditions are necessary and sufficient that there exist at least one homeomorphism T such that $T(S)=S'$ and $T(M)=M'$: (1) for each cut point P of power 2, at least one of the two components of $M-P$ is symmetric, (2) for each cut point of power greater than 3 the power is finite, and all the components of $M-P$ are homeomorphic with each other except perhaps one. If M is a planar graph, the homeomorphism T exists if and only if M is one of the graphs characterized in the author's thesis, with the one exception noted there (Comptes Rendus des Séances de la Société des Sciences et des Lettres de Varsovie, vol. 23 (1930), pp. 164-193). (Received March 16, 1939.)

153. H. A. Arnold: *Note on completely continuous differentials.*

Given a completely continuous operator $F(x)$ on a Kantorovitch space S to S , suppose $F(x)$ to have a completely continuous differential $F(x_0; dx)$ at x_0 . Then if the topological index of the operator $x - F(x_0; x)$ exists, so will the topological index of the transformation $x - F(x)$, and they will be equal. The differential used is one that was first defined by the author, using the idea of approximation to the first difference by means of (abstract) infinitesimals of higher order. The proof of the theorem in question is by means of a metric defined over a single convergent sequence. (Received March 18, 1939.)

154. A. A. Aucoin and W. V. Parker: *Diophantine equations whose members are homogeneous.*

Desboves (Nouvelles Annales de Mathématiques, (2), vol. 18 (1879), p. 481) implies that for $ax^m + by^n = cz^n$ to have a solution in integers, c must always be an integer of a particular kind. If f and g are homogeneous polynomials with integral coefficients, of degrees m and n , respectively, where m and n are relatively prime, then the equation $f(x_1, x_2, \dots, x_r) = g(y_1, y_2, \dots, y_s)$ always has solutions in integers. Expressions for these solutions in terms of $r+s$ parameters are obtained. The method of solving is also shown to be applicable to certain nonhomogeneous equations. As an example, solutions are obtained for the equation $ax^2y + bxz + cyz^2 = pu^3 + qv$, where a, b, c, p, q are integers. (Received March 14, 1939.)