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.

1. Professor D. N. Lehmer: *A law of reciprocity for the entries in a table of linear forms.*

In constructing tables of linear forms for use in making his factor stencils the author found the following theorem of prime importance: If A and B are entries in any table, so also is the product AB an entry. This theorem suggested a close analogy between the theory of the entries in these tables and the theory of quadratic residues. This analogy is far reaching. It leads to the following analog of Legendre's Law of Reciprocity: If P and Q are two odd primes, then P is an entry in the table for Q whenever Q in an entry in the table for P unless P and Q are both of the form $4n-1$, in which case if P is in the table for Q, Q will not be in the table for P. Easy modifications are necessary for negative values of P and Q. Linear form tables may also be constructed giving the tables which have a given entry. (Received November 6, 1933.)

2. Professor Morgan Ward: *The diophantine equation $X^2-DY^2=Z^M$.*

All relatively prime integral solutions of the diophantine equation $X^2-DY^2=Z^M$ are obtained by the use of ideals under the assumptions that D is square-free, incongruent to one modulo 8, while M is any positive integer prime to the class number of the quadratic field $K(D^{1/2})$. The formulas correct and extend earlier attempts by Pepin and others to solve the equation, and are applied to discuss the solution of various allied diophantine equations. (Received November 8, 1933.)

3. Dr. D. C. Duncan: *A plane rational curve of order $2k+1$.*

In an earlier paper (to appear in a forthcoming issue of this Bulletin) the writer has established the existence of real, non-degenerate, completely symmetric, self-dual, *elliptic* curves of order $4k+2$, with the singularities all distinct, together with a plan for sketching them approximately. In the present paper one observes that the completely symmetric, self-dual *rational* curve with its singular elements all distinct has a real existence for all orders. Moreover, a very good approximation of such a locus of order n (i.e., $2k+1$) is realized by drawing secant lines through all *consecutive* pairs of $n-2$ points