MATHEMATICS

Chairman: PAUL M. PEPPER, University of Notre Dame

The MATHEMATICS SECTION met with the Indiana Section, MATHEMATICAL ASSOCIATION OF AMERICA.

Professor Juna L. Beal, Butler University, was elected chairman of the section for 1945.

Some remarks on final grades in freshmen mathematics. M. W. KELLER and H. F. S. JONAH, Purdue University.—In this paper the authors present some data which indicates from this preliminary study that there are variations in final grades when ordinary final examinations are given, when no examinations are given, and when uniform objective final examinations are given.

e and π in Elementary Calculus. KARL MENGER, University of Notre Dame.—We introduced the "natural" exponential line $y = e^x$ as that member of the family of exponential lines $y = a^x$ which has only the point $(0, 1)$ in common with the auxiliary line $y = x + 1$; and the "natural" tangential line of period π as that member of the family of tangential lines $y = \tan \dfrac{2R}{p} x$ which touches the auxiliary line $y = x$. (Here R denotes the measure of a right angle, p the period of the tangential function.)

On certain recursion inequalities with applications. PAUL M. PEPPER, University of Notre Dame.—Given a switchboard with n terminals and wires with which to connect the terminals in pairs, one may ask "What is the greatest number of cross-connections which can be made without there being somewhere three terminals each two of which are joined by a wire?" Knowing the answer to this question, one may ask for "a distribution of the maximum number of wires on the terminals in such a way as to form no triangles (i.e., no 3 terminals each 2 of which are connected)." In solving these and allied problems one is led to the following auxiliary problem: "Let a, b, c and u_0 be given integers with a greater than or equal to o, find a simple formula for u_n in terms of a, b, c, u_0 and n if u_n is the least integer satisfying the inequality u_n greater than or equal to $((n + a + c)u_{n-1} — (n + b))/(n + a)$, $n = 1, 2, \ldots, \infty$. The present paper contains a solution of the first two problems and the solution of a 2-parameter family of the recursion inequalities with arbitrary u_0.