

Results regarding the matrix permanent

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ABSTRACT

We briefly introduce the concept of matrix permanent, few properties of the permanents and Ryser's theorem to determine a matrix permanent. The main part of the paper points out new applications of the matrix permanent. Firstly, we analyze the computing of two special types of permutations: permutations with "displacements" and "prohibited" permutations. We obtain formulas to compute such types of permutations. Another application of matrix permanent regards the number of systems of distinct representatives (SDR) of subsets. We start from the Hall's theorem, which proofs only the existence of such SDR. The number of SDR can be obtained using the matrix permanent. This result is very useful in the theory of graphs, exactly in the study of bipartite graphs.

References:

1. Constantinescu G., Constantinescu E., The matrix permanent, The annual meeting of the Romanian Society of Mathematics, University of Craiova, 1999.
2. Hall, M. Jr., Combinatorial Theory, John Wiley, New York, 1986.
3. Tomescu I., Introduction to Combinatorics, Technical Publisher House, Bucharest, 1972

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