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On finite groups of whose all proper subgroups are w-cyclic

HOSSEIN ANDIKFAR AND ALI REZA ASHRAFI

ABSTRACT. A finite group G is called w-cyclic, if G has at most d subgroup, for all divisors d of $|G|$. In this paper, we study the structure of a finite group all of whose proper subgroups are w-cyclic. In the case that G has prime power order, we prove that such a group is elementary abelian of order p^2, p is prime, the quaternion group Q_8 or the generalized quaternion group Q_{16}. We prove that if such a G is not a p-group, then G is solvable and in some cases, we obtain the structure of G. Finally, we characterize the finite groups with w-cyclic proper quotient groups.

DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTER SCIENCE
UNIVERSITY OF ILLINOIS AT CHICAGO
CHICAHO, IL, USA

DEPARTMENT OF MATHEMATICS, FACULTY OF SCIENCE SCIENCE
UNIVERSITY OF KASHAN, KASHAN, IRAN
E-mail address: ashrafi@kashanu.ac.ir