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A CHARACTERIZATION OF THE SIMPLE GROUP $U_3(5)$

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Dedicated to Professor Katuzi Ono

0. In this note we consider a finite group G which satisfies the following conditions:

(0. 1) G is a doubly transitive permutation group on a set Ω of $m+1$ letters, where m is an odd integer ≥ 3,

(0. 2) if H is a subgroup of G and contains all the elements of G which fix two different letters α, β, then H contains unique permutation $h_0 \neq 1$ which fixes at least three letters,

(0. 3) every involution of G fixes at least three letters,

(0. 4) G is not isomorphic to one of the groups of Ree type.

Here we mean by groups of Ree type the groups which satisfy the conditions of H. Ward [13] and the minimal Ree group of order $(3-1)3^3$ (3^3+1).

We shall prove the following theorem.

THEOREM. *The simple group* $U_3(5)$ *is the only group with the properties* $(0,1) \sim (0,4)$.

(*Remark:* A theorem of R. Ree [8] seems to be incomplete).

The theorem is proved in a usual argument. Final identification of $U_3(5)$ is completed by a theorem of rank 3-groups due to D.G. Higman.

Our notation is standard and will be explained when first introduced.

1. Before proving our theorem, we quote here various results proved by R. Ree [8].

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