

Denote by S_n the group of permutations of the sequence $(1, 2, \dots, n)$. Suppose that G is a subgroup of S_n , such that for every $\pi \in G \setminus \{e\}$ there exists a unique $k \in \{1, 2, \dots, n\}$ for which $\pi(k) = k$. (Here e is the unit element in the group S_n .) Show that this k is the same for all $\pi \in G \setminus \{e\}$.