A description of an automorphism of a split metacyclic p-group

ABSTRACT

A map on a group is not necessarily an automorphism on the group. In this paper we determined the necessary and sufficient conditions of a map on a split metacyclic p-group to be an automorphism, where we only considered p as an odd prime number. The metacyclic group can be defined by a presentation and it will be beneficial to have a direct relation between the parameters in the presentation and an automorphism of the group. We considered the action of an automorphism on the generators of the group mentioned. Since any element of a metacyclic group will be mapped to an element of the group by an automorphism, we can conveniently represent the automorphism in a matrix notation. We then used the relations and the regularity of the split metacyclic p-group to find conditions on each entry of the matrix in terms of the parameters in its presentation so that such a matrix does indeed represent an automorphism.

Keyword: Automorphism; Matrix representation; Split metacyclic p-group