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A STUDY ON CONJUGACY GRAPHS

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Abstract: In this paper, we introduce the notion of an equivalence graph based on equivalence relation defined on a group. Furthermore, restricting ourselves to conjugacy relation, a special type of equivalence graph called a conjugacy graph is also defined. In addition, a graph theoretical expression for the class equation is established followed by related results.

Keywords and Phrases: Equivalence graph, conjugacy relation, conjugacy graph.

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1. Introduction

Recall that a *group* G is a set together with a binary operation $*$ defined on it such that it satisfies closure property, associativity, the existence of an identity element, and the existence of the inverse. In order to avoid ambiguity we denote the identity element of the group by i_G. The *order* of a group, denoted by $o(G)$, is the total number of elements present in the group. Let H be a non-empty subset of G. Then, for any $a \in G$, the set $aH = \{ah : h \in H\}$ is called a *left coset* of H in G and the set $Ha = \{ha : h \in H\}$ is called a *right coset* of H in G. The *center* of a group G, denoted by $Z(G)$, is the set of elements in G that commute with every element in G. The *normalizer* of an element $a \in G$, denoted by $N(a)$, is the set of