

# 1 Group Theory

## Definition 1.1: Inner automorphisms

Let  $G$  be a group, and let  $a \in G$ . The function  $\phi_a$  defined by

$$\phi_a(x) = axa^{-1} \quad \text{for all } x \in G$$

is called the **inner automorphism** of  $G$  induced by  $a$ .

## Theorem 1.1: Automorphism Groups

The set of automorphisms of a group ( $\text{Aut}(G)$ ) and the set of inner automorphisms ( $\text{Inn}(G)$ ) are both groups under the operation of function composition.