THE UNIQUENESS OF INVERSES – ANSWER

Theorem: Let G be a group, and let $a \in G$. Then a has a unique inverse, denoted by a^{-1}.

Proof: Let G be a group, and let $a \in G$. Now suppose that $b, c \in G$ such that both b and c are inverses of a. Then $ab = e$, the identity, and $ac = e$. Hence, $ab = ac$. But by our Left Cancellation Theorem, this implies that $b = c$. Therefore, in a group an element a has only one, unique inverse, denoted by a^{-1}.

□