Galois Groups Of Some Field Extensions

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Abstract

If $F$ is a subfield of a field $K$, then $K$ is called an extension field of $F$. The set of all field automorphisms of $K$ forms a group, called the automorphism group of $K$; and is often denoted by $\text{Aut}(K)$. The subset of $\text{Aut}(K)$ of all automorphisms of $K$ which leave the ground field $F$ fixed elementwises forms a subgroup of $\text{Aut}(K)$, called the Galois group of $K$ over $F$; and is denoted by $\text{Gal}(K,F)$. In general, it is not easy to determine the Galois group of an arbitrarily given field extension. In terms of group structure, there are all sorts of Galois groups. This thesis studies different field extensions and their Galois groups; especially those extensions of characteristic zero. Then establishes a correspondence between the subfields of a field extension and the subgroups of its Galois group.