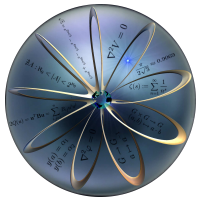

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Galois group

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The *Galois group* $\mathrm{Gal}(K/F)$ of a field extension K/F is the group of all field automorphisms $\sigma\colon K \to K$ of K which fix F (i.e., $\sigma(x) = x$ for all $x \in F$). The group operation is given by composition: for two automorphisms $\sigma_1, \sigma_2 \in \mathrm{Gal}(K/F)$, given by $\sigma_1\colon K \to K$ and $\sigma_2\colon K \to K$, the product $\sigma_1 \cdot \sigma_2 \in \mathrm{Gal}(K/F)$ is the composite of the two maps $\sigma_1 \circ \sigma_2\colon K \to K$.

The *Galois group* of a polynomial $f(x) \in F[x]$ is defined to be the Galois group of the splitting field of $f(x)$ over F.