THE PROBLEM FOR ISOMORPHISM OF GROUP ALGEBRAS OF FINITE GROUPS OVER THE FIELD OF RATIONAL NUMBERS

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Abstract. *Let G and H be finite groups and $\mathbb{Q}$ be the field of rational numbers. The problem for isomorphism of group algebras over $\mathbb{Q}$ is formulated the following way: is it true that $\mathbb{Q}G \cong \mathbb{Q}H$ if and only if $G \cong H$? In this paper we prove that when $|G| < 27$, then $\mathbb{Q}G \cong \mathbb{Q}H$ always implies $G \cong H$. Furthermore, we construct an example that shows that when $|G| = 27$ then $\mathbb{Q}G \cong \mathbb{Q}H$ does not imply $G \cong H$.*

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