ON SOLVING RELATIVE NORM EQUATIONS IN ALGEBRAIC NUMBER FIELDS

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ABSTRACT. Let $\mathbb{Q} \subseteq \mathcal{E} \subseteq \mathcal{F}$ be algebraic number fields and $M \subset \mathcal{F}$ a free $o_{\mathcal{E}}$-module. We prove a theorem which enables us to determine whether a given relative norm equation of the form $|N_{\mathcal{F}/\mathcal{E}}(\eta)| = |\theta|$ has any solutions $\eta \in M$ at all and, if so, to compute a complete set of nonassociate solutions. Finally we formulate an algorithm using this theorem, consider its algebraic complexity and give some examples.

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