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Olga Macedońska, Silesian Technical University

On semigroup identities in groups

Let $\mathcal{F}$ be a free semigroup generated by $x, y, \ldots$. A semigroup identity of a group G is a nontrivial identity of the form $u = v$ where $u, v \in \mathcal{F}$, which holds under every substitution of generators by elements from G.

We discuss several open problems concerning semigroup identities and describe a wide class of groups in which: a group satisfies a semigroup identity if and only if it is an extention of a nilpotent group by a group of finite exponent.

Reference: Robert G. Burns, Olga Macedońska, and Yuri Medvedev, Groups Satisfying Semigroup Laws, and Nilpotent-by-Burnside Varieties, *J. Algebra 195 (1997), 510-525* .