

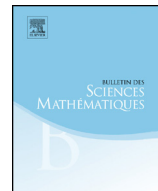


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The generalized Liénard polynomial differential systems $x' = y$, $y' = -g(x) - f(x)y$ with $\deg g = \deg f + 1$ are not Liouvillian integrable

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ABSTRACT

We prove the nonexistence of Liouvillian first integrals for the generalized Liénard polynomial differential systems of the form $x' = y$, $y' = -g(x) - f(x)y$, where $g(x)$ and $f(x)$ are arbitrary polynomials such that $\deg g = \deg f + 1$.

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1. Introduction and statement of the main result

One of the more classical problems in the qualitative theory of planar differential systems depending on parameters is to characterize the existence or not of first integrals.

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