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ON THE POLYNOMIAL SOLUTIONS OF GENERAL POLYNOMIAL DIFFERENTIAL EQUATIONS

CLAUDIA VALLS

Abstract. We deal with the ordinary differential equation of the form $y^m \mathrm{d}y/\mathrm{d}x = P(x,y)$ where $m \geq 2$ and $P(x,y)$ is a real polynomial in the variables x and y of degree n in the variable y. We study the maximum number of the polynomial solutions of this equation with respect to n. We also consider the multiplicity of polynomial limit cycles.

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Universidade de Lisboa
Departamento de Matemática
Lisboa, Portugal
E-mail: cvalls@math.tecnico.ulisboa.pt

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