

Limit cycles of Abel equations of the first kind

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The number of limit cycles of Abel equations $x' = A(t)x^3 + B(t)x^2 + C(t)x$, where A, B, C are trigonometric polynomials, has been extensively studied due its relation with Hilbert 16th problem. In many cases authors impose that some of the coefficients or expressions involving them have definite sign. In this talk we study how to extend some of these criteria to obtain an upper bound of $3n + 1$ limit cycles for generalized Abel equations $x' = P(t, x)$, where P is a degree- n polynomial with coefficients analytic 2π -periodic functions such that $P(t, 0) \equiv 0$.