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THE LIMIT CYCLES OF A CLASS OF QUINTIC POLYNOMIAL VECTOR FIELDS

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Abstract. Using the inverse integrating factor we study the limit cycles of a class of polynomial vector fields of degree 5.

1. Introduction and statement of the main results

One of the main problems in the qualitative theory of differential equations is the study of the limit cycles of planar differential systems and specially of the planar polynomial differential systems, see for instance the book of Ye Yanqian et al. [17] dedicated only to study the limit cycles, mainly of the polynomial differential systems of degree 2. The main interest for studying the limit cycles of the planar polynomial differential systems is due to the 16-th Hilbert problem, see for instance [13] and [15]. Many recent papers are also dedicated to the study of the limit cycles, see for instance the papers [2]–[4], [7], [16] which are more related with our present work.

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