Electronic Journal: Southwest Journal of Pure and Applied Mathematics
Internet: http://rattler.cameron.edu/swjpam.html
ISBN 1083-0464
Issue 2 December 2000, pp. 60 – 87
Submitted: August 11, 2000. Published: December 15, 2000

VECTOR SPACES OVER FUNCTION FIELDS VECTOR SPACES OVER ANALYTIC FUNCTION FIELDS BEING ASSOCIATED TO ORDINARY DIFFERENTIAL EQUATIONS

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Abstract. It is a well-known fact, that the general solution of a linear ordinary differential equation belongs to a function vector space over the real (complex) number field generated by a finite exponential function set. This circumstance allows us to handle the large-time behavior and stability problems easily. However there is a wide class of non-linear differential equations whose solutions belong to some function space being also generated by an arbitrary exponential function set; so that the stability problems can be handled as in the linear case. To discern whether a given autonomous system belongs to such an equation class, sufficient conditions have been stated in a previous article. Now, we generalize those conditions to a wider class of non-linear autonomous systems.

Subject Classification Codes:. 46A19, 46N20, 34A25.

Keywords and Phrases:. Autonomous system, analytic function field, topological vector space, integral transform, Θ-linear equation.

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