

J.M. Almira

Characterization of functions whose forward differences are exponential polynomials

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Abstract: Given $\{h_1, \dots, h_t\}$ a finite subset of \mathbb{R}^d , we study the continuous complex valued functions and the Schwartz complex valued distributions f defined on \mathbb{R}^d with the property that the forward differences $\Delta_{h_k}^{m_k} f$ are (in distributional sense) continuous exponential polynomials for some natural numbers m_1, \dots, m_t .

Keywords: functional equations; exponential polynomials; generalized functions; forward differences

AMS Subject Classification: Primary 39A70; Secondary 39B52

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