

ON CERTAIN POLYNOMIALS ASSOCIATED WITH THE MULTIVARIABLE ALEPH-FUNCTION

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Abstract: In an attempt to unify various bilateral generating functions obtained earlier by Srivastava and Panda [10], Raina [5], and Srivastava and Raina [12], we study here a few new sets of polynomials associated with the multivariable Aleph-function and give certain theorems concerning the generating functions of these polynomials. In the sequel we also show that these theorems can be applied to yield several bilateral generating function for some polynomial sets.

Keywords: Multivariable Aleph-function, classes of multivariable polynomials, multidimensional generating function, multivariable H-function, Aleph-function of two variables, I-function of two variables.

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1. Introduction and Preliminaries

The multivariable Aleph-function is an extension of the multivariable I-function recently defined by C.K. Sharma and Ahmad [7], itself is a generalization of the multivariable H-function defined by Srivastava et al [9,10]. The multivariable Aleph-function is defined by means of the multiple contour integral.

We have,

$$\aleph(z_1, \dots, z_r) = \aleph_{p_i, q_i, \tau_i; R: p_{i(1)}, q_{i(1)}, \tau_{i(1)}; R^{(1)}; \dots; p_{i(r)}, q_{i(r)}, \tau_{i(r)}; R^{(r)}}^{0, n; m_1, n_1, \dots, m_r, n_r} \left(\begin{matrix} z_1 \\ \cdot \\ \cdot \\ \cdot \\ z_r \end{matrix} \middle| \begin{matrix} [(a_j; \alpha_j^{(1)}, \dots, \alpha_j^{(r)})_{1,n}], [\tau_i(a_{ji}; \alpha_{ji}^{(1)}, \dots, \alpha_{ji}^{(r)})_{n+1, p_i}] : [(c_j^{(1)}, \gamma_j^{(1)})_{1, n_1}], \\ \dots \dots [\tau_i(b_{ji}; \beta_{ji}^{(1)}, \dots, \beta_{ji}^{(r)})_{m+1, q_i}] : [(d_j^{(1)}, \delta_j^{(1)})_{1, m_1}], \\ [\tau_{i(1)}(c_{ji(1)}^{(1)}, \gamma_{ji(1)}^{(1)})_{n_1+1, p_i^{(1)}}]; \dots; [(c_j^{(r)}, \gamma_j^{(r)})_{1, n_r}], [\tau_{i(r)}(c_{ji(r)}^{(r)}, \gamma_{ji(r)}^{(r)})_{n_r+1, p_i^{(r)}}] \\ [\tau_{i(1)}(d_{ji(1)}^{(1)}, \delta_{ji(1)}^{(1)})_{m_1+1, q_i^{(1)}}]; \dots; [(d_j^{(r)}, \delta_j^{(r)})_{1, m_r}], [\tau_{i(r)}(d_{ji(r)}^{(r)}, \delta_{ji(r)}^{(r)})_{m_r+1, q_i^{(r)}}] \end{matrix} \right)$$