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THE GENERAL EULERIAN INTEGRAL WITH ALEPH (א)-FUNCTION

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Abstract: The aim of the Present paper is to evaluating the general class of Eulerian integrals involving general class of polynomials and Aleph (א)-function. Our main result (22) below is shown to provide key formula from which many integrals can be deduced.

Keywords: Aleph (א)-function, Beta Integral, general class of polynomials, I-function.

Mathematics Subject Classification: 33C60, 11S23, 33C45.

1. Introduction

For our Purpose we begin by recalling some known functions and earlier works, by the definition of Gamma and Beta functions, it is known that the Eulerian beta integral

$$B(\alpha,\beta)=\int_0^1 t^{\alpha-1}(1-t)^{\beta-1}\,dt=\frac{\Gamma(\alpha)\,\Gamma(\beta)}{\Gamma(\alpha+\beta)};[Re(\alpha)>0;Re(\beta)>0] \quad (1)$$

Can be again in its presented as

$$\int_a^b (t-a)^{\alpha-1}(b-t)^{\beta-1}\,dt=(b-a)^{\alpha+\beta-1}\,B(\alpha,\beta);[Re(\alpha)>0;Re(\beta)>0;a\neq b] \quad (2)$$