EXPLICIT FORMULA FOR GENERALIZATION OF POLY–BERNOULLI NUMBERS AND POLYNOMIALS WITH $a, b, c$ PARAMETERS

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Abstract. In this paper we investigate special generalized Bernoulli polynomials with $a, b, c$ parameters that generalize classical Bernoulli numbers and polynomials. The present paper deals with some recurrence formulae for the generalization of poly-Bernoulli numbers and polynomials with $a, b, c$ parameters. Poly-Bernoulli numbers satisfy certain recurrence relationships which are used in many computations involving poly-Bernoulli numbers. Obtaining a closed formula for generalization of poly-Bernoulli numbers with $a, b, c$ parameters therefore seems to be a natural and important problem. By using the generalization of poly-Bernoulli polynomials with $a, b, c$ parameters of negative index we define symmetrized generalization of poly-Bernoulli polynomials with $a; b; c$ parameters of two variables and we prove duality property for them. Also by Stirling numbers of the second kind we will find a closed formula for them. Furthermore we generalize the Arakawa-Kaneko Zeta functions and by using the Laplace-Mellin integral, define generalization of Arakawa-Kaneko Zeta functions with $a, b, c$ parameters and obtain an interpolation formula for the generalization of poly-Bernoulli numbers and polynomials with $a, b, c$ parameters. Furthermore we present a link between this type of Zeta functions and Dirichlet series. By our interpolation formula, we will interpolate the generalization of Arakawa-Kaneko Zeta functions with $a, b, c$ parameters.


Keywords and phrases: Bernoulli numbers and polynomials, Arakawa-Kaneko Zeta functions, Poly-Bernoulli numbers and polynomials, generalization of Poly-Bernoulli numbers and polynomials with $a, b, c$ parameters, generalization of Arakawa-Kaneko Zeta functions with $a, b, c$ parameters.

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