

A NOTE ON CERTAIN TYPE OF GENERATING FUNCTIONS

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“(Dedicated to Prof. Oscar Chavoya Aceves (1957 - 2023))”

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Abstract: We show that certain type of generating functions allow to construct Cauchy convolutions for the Apostol-Euler and Apostol-Bernoulli polynomials and their connection with partial Bell Polynomials.

Keywords and Phrases: Apostol-Bernoulli polynomials, Apostol-Euler polynomials, Cauchy convolution, Generating functions, Partial Bell polynomials.

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1. Introduction

The property

$$\sum_{n=0}^{\infty} y^n t^n = \frac{1}{\sum_{m=0}^{\infty} z_m t^m}, \quad y_0 = z_0 = 1, \quad (1)$$