GENERALIZED LUCAS POLYNOMIALS AND NEWTON SUM RULES FOR THE ZERO'S DISTRIBUTION OF POLYNOMIAL SOLUTIONS OF O.D.E.

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Abstract

We show some useful applications of the Generalized Lucas Polynomials of the first and second kind. In fact, by using some preceding results of E. Buendia, J. S. Dehesa, F. J. Gálvez [6], P.E. Ricci [41], P. Natalini [34], and P. Natalini - P.E. Ricci [37], we give explicit representation formulas for the Newton sum rules of polynomial solutions of ordinary differential equations with polynomial coefficients.

As an example, we compute the Newton sum rules of the associated and co-recursive of the classical Hermite, Laguerre and Jacobi polynomials, starting from the differential equations satisfied by the associated (see S. Belmedhi - A. Ronveaux [3], A. Zarzo - A. Ronveaux - E. Godoy [45]) and co-recursive (see A. Ronveaux - F. Marcellan [42], A. Ronveaux - A. Zarzo - E. Godoy [43]) of all classical orthogonal polynomials.

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