

CAUCHY'S ERROR REPRESENTATION OF HERMITE INTERPOLATING POLYNOMIAL AND RELATED RESULTS

GORANA ARAS-GAZIĆ, JOSIP PEČARIĆ AND ANA VUKELIĆ

Abstract. In this paper we consider convex functions of higher order. Using the Cauchy's error representation of Hermite interpolating polynomial the results concerning to the Hermite-Hadamard inequalities are presented. As a special case, generalizations for the zeros of orthogonal polynomials are considered.

Mathematics subject classification (2010): Primary 26D15; Secondary 26D07, 26A51.

Keywords and phrases: n -convex function, Hermite interpolating polynomial, Hermite-Hadamard inequality, orthogonal polynomials.

REFERENCES

- [1] R. P. AGARWAL AND P. J. Y. WONG, *Error Inequalities in Polynomial Interpolation and Their Applications*, Kluwer Academic Publishers, Dordrecht/Boston/London, 1993.
- [2] G. ARAS-GAZIĆ, V. ČULJAK, J. PEČARIĆ AND A. VUKELIĆ, *Generalization of Jensen's inequality by Lidstone's polynomial and related results*, *Math. Ineq. Appl.* **16** (4) (2013), 1243–1267.
- [3] G. ARAS-GAZIĆ, V. ČULJAK, J. PEČARIĆ AND A. VUKELIĆ, *Generalization of Jensen's inequality by Hermite polynomials and related results*, *Math. Rep.* **17** (67) (2) (2015), Article 4.
- [4] G. ARAS-GAZIĆ, V. ČULJAK, J. PEČARIĆ AND A. VUKELIĆ, *Cauchy's error representation of Lidstone interpolating polynomial and related results*, *J. Math. Inequal.* **9** (4) (2015), 1207–1225.
- [5] M. BESSENYEI AND ZS. PÁLES, *Higher-order generalizations of Hadamard's inequality*, *Publ. Math. Debrecen* **61** (3–4) (2002), 623–643.
- [6] S. KARLIN, *Total Positivity*, Stanford Univ. Press, Stanford, 1968.
- [7] J. E. PEČARIĆ, F. PROSCHAN AND Y. L. TONG, *Convex functions, partial orderings, and statistical applications*, *Mathematics in science and engineering* **187**, Academic Press, 1992.
- [8] T. POPOVICIU, *Sur l'approximation des fonctions convexes d'ordre superieur*, *Mathematica* **10**, (1934), 49–54.