

**ON EXPONENTIAL CONVEXITY, JENSEN–STEFFENSEN–BOAS
INEQUALITY, AND CAUCHY’S MEANS
FOR SUPERQUADRATIC FUNCTIONS**

S. ABRAMOVICH, G. FARID, S. IVELIĆ AND J. PEČARIĆ

Abstract. In this paper we define new means of Cauchy’s type using some recently obtained results that refine the Jensen-Steffensen-Boas inequality for convex and superquadratic functions [4],[5]. Applying so called *exp-convex method* established in [8],[9], we interpret results in the form of exponentially convex or (as a special case) logarithmically convex functions. We also present some related results which generalize results in [2].

Mathematics subject classification (2010): 26D15.

Keywords and phrases: Jensen-Steffensen inequality, superquadratic functions, Cauchy Means, Monotonicity, exponential convexity, log-convexity.

REFERENCES

- [1] S. ABRAMOVICH, S. BANIĆ, M. MATIĆ AND J. PEČARIĆ, *Jensen-Steffensen’s and related inequalities for superquadratic functions*, Math. Inequal. Appl. **11**, 1 (2008), 23–41.
- [2] S. ABRAMOVICH, G. FARID AND J. PEČARIĆ, *More about Hermite-Hadamard inequalities, Cauchy’s mean and superquadracity*, J. Inequal. Appl., Volume **2010** (2010), Article ID 102467.
- [3] S. ABRAMOVICH, G. FARID AND J. PEČARIĆ, *More about Jensen’s inequality and Cauchy’s means for superquadratic functions*, submitted.
- [4] S. ABRAMOVICH, S. IVELIĆ AND J. PEČARIĆ, *Improvement of Jensen-Steffensen’s Inequality for Superquadratic Functions*, Banach J. Math. Anal. **4**, 1 (2010), 159–169.
- [5] S. ABRAMOVICH, S. IVELIĆ AND J. PEČARIĆ, *Generalizations of Jensen-Steffensen and related integral Inequalities for Superquadratic Functions*, Cent. Eur. J. of Math. **8**, 5 (2010), 937–949.
- [6] S. ABRAMOVICH, G. JAMESON AND G. SINNAMON, *Refining Jensen’s Inequality*, Bull. Math.Sic. Marh.Roum. **47** (2004), 3–14.
- [7] S. ABRAMOVICH, M. KLARIĆIĆ BAKULA AND S. BANIĆ, *A variant of Jensen-Steffensen’s inequality for convex and superquadratic functions*, J. Inequal. Pure Appl. Math. **7**, 2 (2006), Art. 70.
- [8] M. ANWAR, J. JAKŠETIĆ J. PEČARIĆ AND ATIQ UR REHMAN, *Exponential Convexity, Positive Semi-Definite Matrices and Fundamental Inequalities*, J. Math. Inequal. **4**, 2 (2010), 171–189.
- [9] M. ANWAR, J. PEČARIĆ, *On logarithmic convexity for differences of power means and related results*, Math. Inequal. Appl. **12**, 1 (2009), 81–90.
- [10] S. BANIĆ, J. PEČARIĆ AND S. VAROŠANEC, *Superquadratic functions and refinements of some classical inequalities*, J. Korean Math. Soc. **45** (2008), 513–525.
- [11] R. P. BOAS, *The Jensen-Steffensen inequality*, Univ. Beograd. Publ. Elektrotehn. Fak. Ser. Mat. Fiz. No. **302–319** (1970), 1–8.
- [12] J. E. PEČARIĆ, F. PROSCHAN, Y. L. TONG, *Convex Functions, Partial Orderings, and Statistical Applications*, Academic Press, New York, 1992.