

CERTAIN INEQUALITIES FOR CONVEX FUNCTIONS

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Abstract. This is a review paper on some new inequalities for convex functions of one and several variables. The most important result presented for convex functions of one variable is the extension of Jensen's inequality to affine combinations. The most interesting results presented for convex functions of several variables refer to inequalities concerning simplexes and its cones.

Mathematics subject classification (2010): 26A51, 26B25, 52A20, 52B11.

Keywords and phrases: affine combination, simplex, hyperplane, Jensen's inequality.

Acknowledgement. This research was supported by Croatian Science Foundation under the project 5435.

REFERENCES

- [1] M. BJELICA, *Refinement and converse of Brunk-Olkin inequality*, J. Math. Anal. Appl. **272** (1998), 462-467.
- [2] J. L. W. V. JENSEN, *Om konvekse Funktioner og Uligheder mellem Middelværdier*, Nyt tidsskrift for matematik. B. **16** (1905), 49-68.
- [3] B. JESSEN, *Bemærkninger om konvekse Funktioner og Uligheder imellem Middelværdier. I.*, Matematisk tidsskrift. B. **2** (1931), 17-28.
- [4] A. MCD. MERCER, *A variant of Jensen's inequality*, JIPAM, **4** (2003), Article 73.
- [5] C. P. NICULESCU AND L. E. PERSSON, *Old and new on the Hermite-Hadamard inequality*, Real Anal. Exchange **29** (2003), 663-685.
- [6] M. NIEZGODA, *A generalization of Mercer's result on convex functions*, Nonlinear Anal. **71** (2009) 2771-2779.
- [7] Z. PAVIĆ, *Functions like convex functions*, J. Funct. Spaces **2014** (2014), Article ID 919470, in Press.
- [8] Z. PAVIĆ, *Extension of Jensen's inequality to affine combinations*, J Inequal Appl **2014** (2014), Article 298.
- [9] Z. PAVIĆ, *Generalizations of Jensen-Mercer's Inequality*, JPAM:AA **11** (2014), 19-36.
- [10] Z. PAVIĆ AND S. WU, *Inequalities for convex functions on simplexes and their cones*, Abstr. Appl. Anal. **2014** (2014), Article ID 690803.
- [11] J. E. PEČARIĆ, *A simple proof of the Jensen-Steffensen inequality*, Amer. Math. Monthly **91** (1984) 195-196.
- [12] J. PEČARIĆ, A. PERUŠIĆ AND K. SMOLJAK, *Mercer and Wu-Srivastava generalisations of Steffensen's inequality*, Appl. Math. Comput. **219** (2013), 10548-10558.
- [13] J. E. PEČARIĆ, F. PROSCHAN AND Y. L. TONG, *Convex Functions, Partial Orderings, and Statistical Applications*, Academic Press, New York, USA, 1992.
- [14] I. RAŠA, *A note on Jensen's inequality*, in Itinerant Seminar on Functional Equations, Approximation and Convexity, Universitatea Babeş-Bolyai, Cluj-Napoca, (1988), 275-280.
- [15] E. J. MCSHANE, *Jensen's inequality*, Bull. Amer. Math. Soc. **43** (1937), 521-527.
- [16] R. T. ROCKAFELLAR, *Convex Analysis*, Princeton University Press, New Jersey, USA, 1972.