Journal of Mathematical Inequalities
Volume 14, Number 3 (2020), 641–659
doi:10.7153/jmi-2020-14-41

REARRANGEMENTS AND JENSEN TYPE INEQUALITIES RELATED TO CONVEXITY, SUPERQUADRACITY, STRONG CONVEXITY AND 1–QUASICONVEXITY

S. ABRAMOVICH AND L.-E. PERSSON

Abstract. In this paper we derive and discuss some new theorems related to all rearrangements of a given set in $\mathbb{R}^n$, denoted $(\mathbf{x})$ and use the results to prove some new Jensen type inequalities for convex, superquadratic, strongly convex and 1-quasiconvex functions.

Mathematics subject classification (2010): 26D15, 26A51.
Keywords and phrases: Inequalities, Jensen's inequality, rearrangements, circular rearrangements, convexity, superquadracity, strong convexity, 1-quasiconvexity.

REFERENCES

[1] S. ABRAMOVICH, *The increase of sums and products dependent on $(y_1,...,y_n)$ by rearrangement of this set*, Israel J. Math., 5,(1967), 177–181.
[2] S. ABRAMOVICH, *Superquadracity of functions and rearrangements of sets*, J. Inequal. Pure and Appl. Math, 8(2), Art.46, (2007).
[3] S. ABRAMOVICH, G. JAMESON, AND G. SINNAMON, *Refining Jensen's inequality*, Bull. Math. Soc. Sci. Math. Roumanie (N.S.) 47(95) (2004), no.1-2, 3–14.
[4] S. ABRAMOVICH AND L-E. PERSSON, *Fejer and Hermite-Hadamard inequality for N-quasiconvex functions*, Math. Notes, 102 (5), (2017), 644–656.
[5] A. L. LEHMAN, *Results on rearrangements*, Israel J. Math., 1, no.1, (1963), 22–28.
[6] C. P. NICULESCU AND L.-E. PERSSON, *Convex functions and their applications - A contemporary approach*, Second Edition, Canad. Math. Series Books in Mathematics, Springer, (2018).
[7] J. PEČARIĆ, F. PROSCHAN AND Y. L. TONG, *Convex functions, partial ordering and statistical applications*, Mathematics in Science and Engineering, 187, Academic Press Boston, (1992).
[8] H. YU, *Circular rearrangement inequality*, J. Math. Inequal, 12, (2018), no.1, 636–643.