

ALTERNATIVE REVERSE INEQUALITIES FOR YOUNG'S INEQUALITY

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Abstract. Two reverse inequalities for Young's inequality were shown by M. Tominaga, using Specht ratio. In this short paper, we show alternative reverse inequalities for Young's inequality without using Specht ratio.

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REFERENCES

- [1] N. A. BOBYLEV AND M. A. KRASNOSELSKY, *Extremum Analysis (degenerate cases)*, Moscow, preprint, 1981, 52 pages, in Russian.
- [2] S. DRAGOMIR, *Bounds for the Normalized Jensen Functional*, Bull. Austral. Math. Soc. **74** (2006), 471–478.
- [3] F. KITTANEH AND Y. MANASRAH, *Improved Young and Heinz inequalities for matrices*, J. Math. Anal. Appl. **36** (2010), 262–269.
- [4] J. M. ALDAZ, *Self-improvement of the inequality between arithmetic and geometric means*, J. Math. Inequal. **3** (2009), 213–216.
- [5] J. M. ALDAZ, *Comparison of differences between arithmetic and geometric means*, to appear in Tamkang Journal of Mathematics (arXiv:1001.5055v2).
- [6] F. C. MITROI, *About the precision in Jensen-Steffensen inequality*, Annals of the University of Craiova, Mathematics and Computer Science Series, **37** (2010), 73–84.
- [7] S. FURUICHI, *On refined Young inequalities and reverse inequalities*, J. Math. Inequal. **5** (2011), 21–31.
- [8] S. FURUICHI, *Refined Young inequalities with Specht's ratio*, to appear in J. Egypt. Math. Soc., arXiv: 1004.0581v2.
- [9] N. MINCULETE, *A result about Young inequality and several applications*, submitted for publication.
- [10] N. MINCULETE, *A refinement of the Kittaneh-Manasrah inequality*, submitted for publication.
- [11] M. TOMINAGA, *Specht's ratio in the Young inequality*, Sci. Math. Japon. **55** (2002), 538–588.
- [12] W. SPECHT, *Zur Theorie der elementaren Mittel*, Math. Z. **74** (1960), 91–98.
- [13] T. FURUTA, *Specht ratio $S(1)$ can be expressed by Kantorovich constant $K(p) : S(1) = \text{Exp}[K'(1)]$ and its application*, Math. Inequal. Appl., **6** (2003), 521–530.
- [14] M. FUJII, J. MIČIĆ, L. PEČARIĆ AND Y. SEO, *Reverse inequalities on chaotically geometric mean via Specht ratio II*, J. Inequal. Pure and Appl. Math. **4** (2003), Art. 40.
- [15] F. KUBO, *On logarithmic operator means*, Tenth Symposium on Applied Functional Analysis, 1987, pp. 47–61.