

## ON AN OPEN PROBLEM OF FENG QI AND BAI-NI GUO

MOHAMED BOUALI

*Abstract.* In this work, we investigate an open problem posed by Feng Qi and Bai-Ni Guo in their paper "Complete monotonicities of functions involving the gamma and digamma functions [7]".

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### REFERENCES

- [1] H. ALZER AND C. BERG, *Some classes of completely monotonic functions*, Ann. Acad. Scient. Fennicae, **27**, 2, 2002, 445–460.
- [2] M. E. H. ISMAIL, *Integral representation and complete monotonicity of various quotient of Bessel functions*, Canad. J. Math., **29**, 6, 1977, 1198–1207.
- [3] K. S. MILLER AND S. G. SAMKO, *Completely monotonic functions*, Int. Transf and Spec. Funct., **12**, 4, 2001, 389–402.
- [4] S. D. MITRINović, J. E. PEČARIĆ AND A. M. FINK, *Classical and New Inequalities in Analysis*, Academic Publishers, Dordrecht/Boston/London, 1993.
- [5] F. QI, D. N. NIU AND J. CAO, *An infimum and an upper bound of a function with two independent variables*, Octogon Math. Mag., **14**, 1, 2006, in press.
- [6] F. QI, J. CAO, N. DA-WEI AND N. UJEVIĆ, *An upper bound of a function with two independent variables*, Appl. Math. E-Notes, **6**, 1, 2006 148–152.
- [7] F. QI AND B. N. GUO, *Complete monotonicities of functions involving the gamma and digamma functions*, RGMIA Res. Rep. Coll., **7**, 1, 2004.
- [8] F. QI, *Logarithmic convexity of extended mean values*, Proc. Amer. Math. Soc., **130**, 6, 2002, 1787–1796.
- [9] F. QI, *The extended mean values: definition, properties, monotonicities, comparison, convexities, generalizations, and applications*, Cubo A Mathematical Journal, **5**, 03, 2003, 63–90.
- [10] F. QI AND S. L. XU, *The function  $(b^x - a^x)/x$ : Inequalities and properties*, Proc. Amer. Math. Soc., **126**, 11, 1998, 3355–3359.
- [11] R. L. SCHILLING, R. SONG AND Z. VONDRAČEK, *Bernstein functions* (second edition), De Gruyter Studies in Mathematics. Walter de Gruyter & Co., Berlin. Theory and applications, 2012.
- [12] D. V. WIDDER, *The Laplace Transform*, Princeton Mathematical Series, v. 6., Princeton University Press, Princeton, N. J., 1941.