

ON GENERALIZATION OF D'AURIZIO-SÁNDOR INEQUALITIES INVOLVING A PARAMETER

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Abstract. In this work, we generalize the D'Aurizio-Sándor inequalities ([2, 4]) using an elementary approach. In particular, our approach provides an alternative proof of the D'Aurizio-Sándor inequalities. Moreover, as an immediate consequence of the generalized D'Aurizio-Sándor inequalities, we establish the D'Aurizio-Sándor-type inequalities for hyperbolic functions.

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REFERENCES

- [1] M. ABRAMOWITZ AND I. A. STEGUN, (Eds.), *Handbook of Mathematical Functions with Formulas, Graphs, and Mathematical Tables*, National Bureau of Standards, Applied Mathematics Series **55**, 9th printing, Washington, 1970.
- [2] J. D'AURIZIO, *Refinements of the Shafer-Fink inequality of arbitrary uniform precision*, Math. Inequal. Appl. **17**, 4 (2014), 1487–1498.
- [3] T. J. RIVLIN, *Chebyshev Polynomials*, Wiley, New York, 1970.
- [4] J. SÁNDOR, *On D'Aurizio's trigonometric inequality*, J. Math. Inequal. **10**, 3 (2016), 885–888.
- [5] J. SÁNDOR, *Extensions of D'Aurizio's trigonometric inequality*, Notes on Number Theory and Discrete Mathematics **23**, 2 (2017), 81–83.