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OPTIMAL GENERALIZED LOGARITHMIC MEAN BOUNDS FOR THE GEOMETRIC COMBINATION OF ARITHMETIC AND HARMONIC MEANS

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Abstract. In this paper, we answer the question: for $\alpha \in (0,1)$, what are the greatest value $p = p(\alpha)$ and least value $q = q(\alpha)$, such that the double inequality $L_p(a,b) \leq A^{\alpha}(a,b)H^{1-\alpha}(a,b) \leq L_q(a,b)$ holds for all $a, b > 0$? where $L_p(a,b)$, $A(a,b)$, and $H(a,b)$ are the p-th generalized logarithmic, arithmetic, and harmonic means of a and b, respectively.

Key words: Generalized logarithmic mean, arithmetic mean, harmonic mean.

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