

RESEARCH GROUP IN MATHEMATICAL INEQUALITIES AND APPLICATIONS

PROBLEM CORNER

Problem 1, (2009)

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Control of $A(x_1, \dots, x_n) - H(x_1, \dots, x_n)$

For given positive real numbers x_1, \dots, x_n , let

$$A(n) = A(x_1, \dots, x_n) = \frac{1}{n} \sum_{1 \leq k \leq n} x_k,$$

and

$$H(n) = H(x_1, \dots, x_n) = \frac{n}{\sum_{1 \leq k \leq n} \frac{1}{x_k}},$$

which are arithmetic and harmonic means of x_1, \dots, x_n , respectively. It is known that $0 \leq A(n) - H(n)$. I need more precise bounds for the difference $A(n) - H(n)$, conditionally or unconditionally.