BOUNDS FOR THE NORMALIZED JENSEN–MERCER FUNCTIONAL

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Abstract. We introduce the normalized Jensen-Mercer functional
\[ M_n(f, x, p) = f(a) + f(b) - \sum_{i=1}^{n} p_i f(x_i) - f(a + b - \sum_{i=1}^{n} p_i x_i) \]
and establish the inequalities of type \( M_n(f, x, q) \geq M_n(f, x, p) \geq m M_n(f, x, q) \), where \( f \) is a convex function, \( x = (x_1, \ldots, x_n) \) and \( m \) and \( M \) are real numbers satisfying certain conditions. We prove them for the case when \( p \) and \( q \) are nonnegative \( n \)-tuples and when \( p \) and \( q \) satisfy the conditions for the Jensen-Steffensen inequality. We also give their integral versions in both cases.


Keywords and phrases: Jensen-Mercer functional, Jensen-Mercer inequality, convex functions, bounds.

REFERENCES