ON \((k,h;m)\)-CONVEX MAPPINGS AND APPLICATIONS

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Abstract. In this paper, for given positive integer \(m\) and real functions \(k\) and \(h\), we prove \((k,h;m)\)-convexity of the mapping \(p \mapsto \phi(p)f\left(\frac{\Phi(p)}{\phi(p)}\right)\) with a convex (increasing) function \(f\) and a \((k,h;m)\)-convex mapping \(\Phi\) and a positive \((k,h;m)\)-concave mapping \(\phi\). As application, we establish a subadditivity result for completely monotone and Bernstein functions. We also show monotony of the mappings \(p \mapsto \frac{\Phi(p)}{\phi(p)}\) and \(p \mapsto f\left(\frac{\Phi(p)}{\phi(p)}\right)\) with respect to a group majorization combined with other preorders.


Keywords and phrases: Jensen’s inequality, Jensen-Mercer’s inequality, sub-/superadditive function, convex function, preorder, increasing mapping, \((k,h;m)\)-convex/concave mapping, \(s\)-convex function, completely monotone function, Bernstein function, majorization, group majorization.

REFERENCES