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SOME NEW HADAMARD TYPE INEQUALITIES FOR CO-ORDINATED m-CONVEX AND (α, m)-CONVEX FUNCTIONS

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Abstract

In this paper, we establish some new Hermite-Hadamard type inequalities for m-convex and (α, m)-convex functions of 2-variables on the co-ordinates.

Keywords: m-convex function, (α, m)-convex function, co-ordinated convex mapping, Hermite-Hadamard inequality.

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1. Introduction

Let $f : I \subseteq \mathbb{R} \to \mathbb{R}$ be a convex mapping defined on the interval I of real numbers, and $a, b \in I$ with $a < b$. The following double inequality is well known in the literature as the Hermite-Hadamard inequality [5]:

$$f\left(\frac{a+b}{2}\right) \leq \frac{1}{b-a}\int_a^b f(x)\,dx \leq \frac{f(a)+f(b)}{2}.$$

In [8], the notion of m-convexity was introduced by G.Toader as the following:

1.1. Definition. The function $f : [0, b] \to R$, $b > 0$ is said to be *m-convex*, where $m \in [0, 1]$, if we have

$$f(tx + m(1-t)y) \leq tf(x) + m(1-t)f(y)$$

for all $x, y \in [0, b]$ and $t \in [0, 1]$. We say that f is *m-concave* if $-f$ is m-convex.

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