Mathematical
Inequalities
& Applications
Volume 2, Number 2 (1999), 175–181

AN INEQUALITY FOR MIXED POWER MEANS

CHRISTOS D. TARNAVAS AND DIMITRIOS D. TARNAVAS

Abstract. In 1992 Frank Hollad [1] stated the following inequality

$$(A_1A_2\dots A_n)^{\frac{1}{n}} \geqslant \frac{1}{n}(G_1G_2\dots G_n) \tag{1}$$

where A_k, G_k, $k = 1,2,\dots,n$ are arithmetic and geometric means, respectively, of positive numbers $a_1, a_2, ,\dots, a_k$.

In 1994 Kiran Kedlaya [2] gave a combinatorial proof of (1). In 1995 Takashi Matsuda [3] gave another proof of (1).

In 1996 B. Mond and J. Pečarić [5] proved the following generalization of inequality (1) involving power means:

$$\text{if} \quad s > r \quad \text{then} \quad m_{r,s}(a) \geqslant m_{s,r}(a), \tag{2}$$

where $m_{r,s}(a)$ is defined by the following definition (1.2).

In this article a more general inequality, which concern weighted power means, is proved.

Mathematics subject classification (1991): 26D15, 26D20.
Key words and phrases: mixed power means, weighted power means, power means, convex.

REFERENCES

[1] FRANK HOLLAND, *On a mixed arithmetic-mean, geometric-mean inequality*, Mathematics Competitions **5** (1992), 60–64.
[2] KIRAN KEDLAYA, *Proof of a Mixed Arithmetic-Mean, Geometric-Means Inequality,*, Amer. Math. Monthly **101** (1994), 355–357.
[3] TAKASHI MATSUDA, *An Inductive Proof of a Mixed Arithmetic-Geometric Mean Inequality*, Amer. Math. Monthly **102** (1995), 634–637.
[4] BULLEN, P. S., D. S. MITRINOVIC AND P. M. VASIC, *Means and Their Inequalities*, D. Reidel Publishing Company, Dordrecht, 1988.
[5] B.MOND AND J.PECARIC, *A mixed means inequality*, Austral. Math. Soc. Gazette **23** (1996), 67–70.

Paper MIA-02-15