

## SOME NEW PROOFS FOR THE AGM INEQUALITY

J. ROOIN

*Abstract.* In this paper, using some techniques of mathematical analysis, we give some new proofs for the AGM inequality.

*Mathematics subject classification (2000):* 26D15.

*Key words and phrases:* Arithmetic mean, geometric mean, inequality.

### REFERENCES

- [1] M. AIGNER, G. M. ZIEGLER, *Proofs from The Book*, 2. ed., Springer, Berlin, 2001.
- [2] H. ALZER, *A Proof of the Arithmetic Mean-Geometric Mean Inequality*, *Amer. Math. Monthly* **103** (1996) 585.
- [3] E. F. BECKENBACH AND R. BELLMAN, *Inequalities*, Springer, Berlin, 1983.
- [4] P. S. BULLEN, D. S. MITRINOVIĆ AND P. M. VASIĆ, *Means and Their Inequalities*, Reidel, Dordrecht, 1988.
- [5] G. H. HARDY, J. E. LITTLEWOOD AND G. PÓLYA, *Inequalities*, Cambridge University Press, Cambridge, 1967.
- [6] D. S. MITRINOVIĆ, *Analytic Inequalities*, Springer, New York, 1970.
- [7] D. S. MITRINOVIĆ, J. E. PEČARIĆ AND A. M. FINK, *Classical and New Inequalities in Analysis*, Kluwer, Dordrecht, 1993.
- [8] J. ROOIN, AGM Inequality with Binomial Expansion, *Elemente Der Mathematik*, **58**(2003) 115–117.
- [9] J. ROOIN, Another Proof of the Arithmetic-Geometric Mean Inequality, *The Mathematical Gazette*, **85**(2001) 285–286.
- [10] J. ROOIN,  $\lim_{n \rightarrow \infty} \sqrt[n]{n} = 1$ , *Amer. Math. Monthly*, **108**(4)(2001) 375.