## A weighted inequality involving the sides of a triangle

## JIAN LIU

## ABSTRACT.

A new weighted inequality involving the sides of a triangle is proved by applying the method of the Difference Substitution, and, as an application, a geometric inequality involving an interior point of the triangle is derived. Finally, two related conjectures which are checked by computer are put forward.

## REFERENCES

- [1] Wolstenholme, J., A Book of Mathematical Problems on Subjects Included in the Cambridge Course, London and Cambridge, 1867
- [2] Mitrinović, D., Pečarić, J. E. and Volenec, V., Recent Advances in Geometric Inequalities, Kluwer Academic Publishers, Dordrecht/Boston London, 1989
- [3] Bottema, O., Djordjević, R. Ž., Janić, R. R., Mitrinović, D. S. and Vasić, P. M., Geometric Inequalities, Groningen, 1969
- [4] Liu, J., An inequality involvign sides of a triangle and its applications, Zhong Xue Shu Xue 11 (1992), 11-14 (in Chinese)
- [5] Liu, Jian, Some new inequalities for the triangle, Zhong Xue Shu Xue 5 (1994), 9-12 (in Chinese)
- [6] Liu, Jian, A new weighted inequality related to the sides of an acute triangle, J. of Foshan Univ. (Nat. Sci. Ed.), 21 (2003), No. 4, 4-7 (in Chinese)
- [7] Liu, Jian, The Composite Theorem of Ternary Quadratic Inequalities and its Applications, RGMIA Research Report Collection 11 (2008), No. 4, http://www.staff.vu.edu.au/RGMIA/v11n4.asp
- [8] Yu-Dong Wu, A new proof of a weighted Erdös-Mordell type inequality, Forum Geometricorum 8 (2008), 163-166, http://forumgeom.fau.edu/FG2008volume8/index.html
- [9] Yu-Dong Wu, Zhi-hua Zhang and Yu-Rui Zhang, Proving inequalities in acute triangle with difference substitution, Inequal. Pure Appl. Math. 8 (2007), No. 3, Art. 81
- [10] Yang, Lu Difference substitution and automated inequality proving, J. Guangzhou Univ. Nat. Sci. 5 (2006), No. 2, 1-7 (in Chinese)

EAST CHINA JIAOTONG UNIVERSITY,

NANCHANG CITY, JIANGXI PROVINCE, 330013, P. R. CHINA

E-mail address: liujian99168@yahoo.com.cn