

A TRIGONOMETRIC INEQUALITY AND ITS GEOMETRIC APPLICATIONS

FARUK F. ABI-KHUZAM

Abstract. A sharp inequality for a linear combination of four cosines is obtained. It is used to sharpen inequalities due to Florian, Lenhard, Ozeki all of which extend the classical Erdős-Mordell inequality. Reverse isoperimetric inequalities for cyclic quadrilaterals are also obtained.

Mathematics subject classification (1991): 51M16.

Key words and phrases: Erdős-Mordell inequality.

REFERENCES

- [1] BOTTEMA O., DJORDJEVIC R. Z., JANIC R. R., MITRINOVIC D. S., VASIC P. M., *Geometric Inequalities*, Wolters-Noordhoff publishing Groningen, 1969, The Netherlands.
- [2] COXETER H. S. M., GREITZER S. L., *Geometry Revisited*, The Mathematical Association Of America, 1967.
- [3] MITRINOVIC D. S., PECARIC J. E., VOLENEC V., *Recent Advances In Geometric Inequalities*, Kluwer Academic publishers, 1989.
- [4] FLORIAN A., *Zu einem Satz von P. Erdos*, Elem. Math. **13** (1958), 55–58.
- [5] LENHARD H.-C., *Verallgemeinerung und Verschärfung der Erdos-Mordellschen Ungleichung für Polygone*, Arch. Math. Vol. XII, 1961, 311–314.