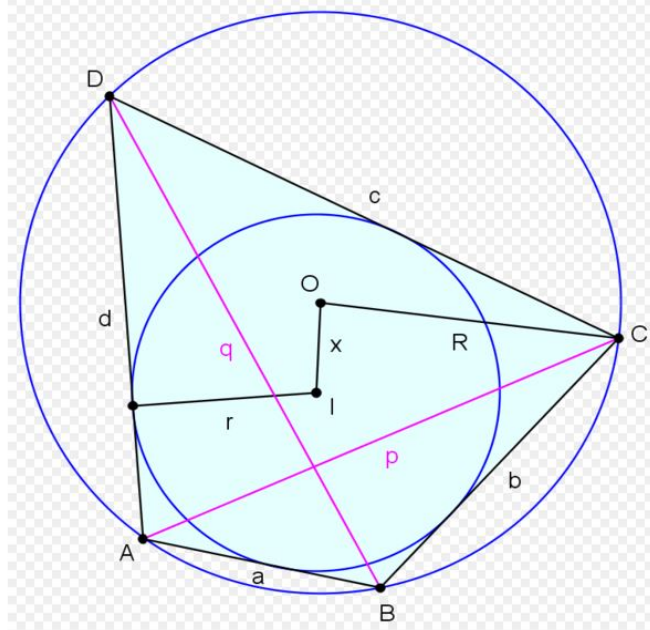


R M M

ROMANIAN MATHEMATICAL MAGAZINE
www.ssmrmh.ro



R –circumradii, r –inradii, s –semiperimeter in a bicentric quadrilateral.

Prove that: $r + \sqrt{r + 4R^2} \geq \frac{32R^2r}{s^2}$

Proposed by Daniel Sitaru-Romania

Solution by Mohamed Amine Ben Ajiba-Tanger-Morocco

By Blundon and Eddy, we have:

$$s^2 \geq 8r(\sqrt{4R^2 + r^2} - r)$$

$$\Rightarrow \frac{32R^2r}{s^2} \leq \frac{4R^2}{\sqrt{4R^2 + r^2} - r} = \frac{4R^2(\sqrt{r^2 + 4R^2} + r)}{(4R^2 + r^2) - r^2}$$

Therefore,

$$r + \sqrt{r + 4R^2} \geq \frac{32R^2r}{s^2}$$

Note by editor:

Many thanks to Florică Anastase-Romania for typed solution.