

ROMANIAN MATHEMATICAL MAGAZINE

In $\triangle ABC$ the following relationship holds:

$$abc \leq 3\sqrt{3}R^3$$

Proposed by Nguyen Hung Cuong – Vietnam

Solution by Daniel Sitaru – Romania

$$\begin{aligned} abc &= 4RF = 4Rrs \stackrel{EULER}{\leq} 4R \cdot \frac{R}{2}s = \\ &= 2R^2 \cdot s \stackrel{MITRINOVIC}{\leq} 2R^2 \cdot \frac{3\sqrt{3}}{2}R = 3\sqrt{3}R^3 \end{aligned}$$

Equality holds for $a = b = c$.