

# ROMANIAN MATHEMATICAL MAGAZINE

In  $\triangle ABC$  the following relationship holds:

$$\sin A + \sin B + \sin C \geq 3\sqrt{3} \cdot \frac{r}{R}$$

*Proposed by Nguyen Hung Cuong – Vietnam*

*Solution by Daniel Sitaru – Romania*

$$\begin{aligned} \sin A + \sin B + \sin C &= \sum_{cyc} \sin A = \sum_{cyc} \frac{a}{2R} = \\ &= \frac{1}{2R} (a + b + c) = \frac{2s}{2R} = \frac{s}{R} \stackrel{\text{MITRINOVIC}}{\geq} \frac{3\sqrt{3}r}{R} \end{aligned}$$

Equality holds for  $a = b = c$ .