

# ROMANIAN MATHEMATICAL MAGAZINE

In acute  $\triangle ABC$  the following relationship holds:

$$\frac{BC}{HA} + \frac{CA}{HB} + \frac{AB}{HC} \geq 3\sqrt{3}$$

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*Solution by Daniel Sitaru-Romania*

$$\begin{aligned} \frac{BC}{HA} + \frac{CA}{HB} + \frac{AB}{HC} &= \sum_{cyc} \frac{BC}{HA} = \sum_{cyc} \frac{a}{2R\cos A} = \sum_{cyc} \frac{2R\sin A}{2R\cos A} = \\ &= \sum_{cyc} \frac{\sin A}{\cos A} = \sum_{cyc} \tan A \stackrel{JENSEN}{\geq} 3\tan\left(\frac{A+B+C}{3}\right) = 3\tan\frac{\pi}{3} = 3\sqrt{3} \end{aligned}$$

Equality holds for an equilateral triangle.