

# ROMANIAN MATHEMATICAL MAGAZINE

If  $H$  – orthocenter in acute  $\triangle ABC$  then:

$$HA + HB + HC \geq 6r$$

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*Solution by Daniel Sitaru-Romania*

$$\begin{aligned} HA + HB + HC &= \sum_{cyc} HA = 2R \sum_{cyc} \cos A = 2R \left(1 + \frac{r}{R}\right) = \\ &= 2R + 2r \stackrel{EULER}{\geq} 2 \cdot 2r + 2r = 6r \end{aligned}$$

Equality holds for an equilateral triangle.