

ROMANIAN MATHEMATICAL MAGAZINE

In ΔABC the following relationship holds:

$$\frac{\sin B}{\sin C} = 2 \cos A \Rightarrow a = c$$

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Solution by Daniel Sitaru-Romania

$$\begin{aligned} \frac{\sin B}{\sin C} = 2 \cos A &\Leftrightarrow \frac{\frac{b}{2R}}{\frac{c}{2R}} = 2 \cos A \Leftrightarrow \frac{b}{c} = 2 \cdot \frac{b^2 + c^2 - a^2}{2bc} \Leftrightarrow \\ &\Leftrightarrow b^2 = b^2 + c^2 - a^2 \Leftrightarrow a^2 = c^2 \Leftrightarrow a = c \end{aligned}$$