

# ROMANIAN MATHEMATICAL MAGAZINE

If  $a, b, c > 0$  then:

$$\sum_{cyc} \frac{\sqrt{(1+b^2)(1+c^2)}}{a} \geq 6$$

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*Solution by Daniel Sitaru – Romania*

$$\begin{aligned} & \sum_{cyc} \frac{\sqrt{(1+b^2)(1+c^2)}}{a} \stackrel{AM-GM}{\geq} \sum_{cyc} \frac{\sqrt{2b \cdot 2c}}{a} = \\ & = 2 \sum_{cyc} \frac{\sqrt{bc}}{a} \stackrel{AM-GM}{\geq} 2 \cdot 3 \sqrt{\frac{\sqrt{bc}}{a} \cdot \frac{\sqrt{ca}}{b} \cdot \frac{\sqrt{ab}}{c}} = 6 \sqrt{\frac{abc}{abc}} = 6 \cdot 1 = 6 \end{aligned}$$

Equality holds for  $a = b = c = 1$ .