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In $\triangle ABC$ the following relationship holds:

$$\sin \frac{A}{2} + \sin \frac{B}{2} + \sin \frac{C}{2} \geq \frac{3r}{R}$$

Proposed by Nguyen Hung Cuong – Vietnam

Solution by Daniel Sitaru – Romania

$$\sin \frac{A}{2} + \sin \frac{B}{2} + \sin \frac{C}{2} \stackrel{JENSEN}{\geq} 3 \sin \frac{\frac{A}{2} + \frac{B}{2} + \frac{C}{2}}{3} = 3 \sin \frac{\pi}{6} = 3 \cdot \frac{1}{2} \geq 3 \cdot \frac{r}{R}$$

Equality holds for $A = B = C$.