ROMANIAN MATHEMATICAL MAGAZINE

In ΔABC the following relationship holds:

$$\cos A \cos B \cos C \leq \frac{r^2}{2R^2}$$

Proposed by Nguyen Hung Cuong-Vietnam

Solution by Tapas Das-India

$$cosAcosBcosC = \frac{s^2 - (2R + r)^2}{4R^2} \overset{GERRETSEN}{\leq}$$

$$\leq \frac{4R^2 + 4Rr + 3r^2 - (2R + r)^2}{4R^2} = \frac{2r^2}{4R^2} = \frac{r^2}{2R^2}$$

Equality holds for $a = b = c$.