PP35477

MIHÁLY BENCZE - ROMANIA

In all triangle ABC holds:

$$\sum_{cyc}(b^2+c^2-a^2)\sin^2 A=\Big(\frac{2sr}{R}\Big)^2$$

Solution by Daniel Sitaru.

$$\sum_{cyc}(b^2+c^2-a^2)\sin^2 A=$$

$$=\sum_{cyc}2bc\cdot\cos A\sin^2 A=$$

$$=2\sum_{cyc}\frac{1}{2}bc\sin A\cdot 2\sin A\cos A=$$

$$=2F\sum_{cyc}\sin 2A=2F\cdot 4\prod_{cyc}\sin A=$$

$$=8F\cdot\frac{F}{2R^2}=\frac{4F^2}{R^2}=\Big(\frac{2F}{R}\Big)^2=\Big(\frac{2rs}{R}\Big)^2$$

□

Mathematics Department, National Economic College "Theodor Costescu", Drobeta Turnu - Severin, Romania

Email address: dansitaru63@yahoo.com