

ROMANIAN MATHEMATICAL MAGAZINE

In $\triangle ABC$ the following relationship holds:

$$F \leq \frac{3abc}{4\sqrt{a^2 + b^2 + c^2}}$$

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Solution by Daniel Sitaru-Romania

$$F \leq \frac{3abc}{4\sqrt{a^2 + b^2 + c^2}} \Leftrightarrow 4F\sqrt{a^2 + b^2 + c^2} \leq 3 \cdot 4RF \Leftrightarrow$$

$$\Leftrightarrow \sqrt{a^2 + b^2 + c^2} \leq 3R \Leftrightarrow a^2 + b^2 + c^2 \leq 9R^2 \text{ (LEIBNIZ)}$$

Equality holds for $a = b = c$.