ROMANIAN MATHEMATICAL MAGAZINE

In ΔABC the following relationship holds:

$$\frac{m_a^2+m_b^2+m_c^2}{3R^2}\leq\frac{9}{4}$$

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Solution by Daniel Sitaru-Romania

$$\frac{m_a^2+m_b^2+m_c^2}{3R^2}=\frac{3}{4}\cdot\frac{a^2+b^2+c^2}{3R^2}=$$

$$=\frac{a^2+b^2+c^2}{4R^2}\overset{LEIBNIZ}{\leq}\frac{9R^2}{4R^2}=\frac{9}{4}$$

Equality holds for $a=b=c$.