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838. *Proposed by Arkady Alt, San Jose, CA.*

Show that in any acute triangle $\triangle ABC$ with sides a , b and c , the following inequality is true:

$$27 \leq (a+b+c)^2 \left(\frac{1}{a^2+b^2-c^2} + \frac{1}{b^2+c^2-a^2} + \frac{1}{c^2+a^2-b^2} \right)$$