

ROMANIAN MATHEMATICAL MAGAZINE

In $\triangle ABC$ the following relationship holds:

$$\sum_{cyc} a(m_a - m_b) \leq 0$$

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$$WLOG : a \leq b \leq c \rightarrow m_a \geq m_b \geq m_c$$

These conditions are suitable for the rearrangements' inequality:

$$B_{min} = am_a + bm_b + cm_c$$

$$C_{mixed} = am_b + bm_c + cm_a$$

$$B_{min} \leq C_{mixed}$$

$$am_a + bm_b + cm_c \leq am_b + bm_c + cm_a$$

$$\sum_{cyc} a(m_a - m_b) \leq 0$$

Equality holds if $a = b = c$