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In ΔABC the following relationship holds:

$$\left(\frac{m_a}{h_a}\right)^{\frac{m_a}{h_a}}\cdot\left(\frac{w_a}{h_a}\right)^{\frac{w_a}{h_a}}+\frac{w_a}{h_a}\geq\frac{m_a}{h_a}+1$$

Proposed by Daniel Sitaru – Romania

Solution by Tapas Das – India

$$\left(\frac{m_a}{h_a}\right)^{\frac{m_a}{h_a}}\cdot\left(\frac{w_a}{h_a}\right)^{-\frac{w_a}{h_a}}=\left(\frac{m_a}{h_a}\right)^{\frac{m_a}{h_a}}\cdot\frac{1}{\left(\frac{w_a}{h_a}\right)^{\frac{w_a}{h_a}}}$$

$$\geq\left(\frac{m_a}{h_a}\right)^{\frac{w_a}{h_a}}\cdot\frac{1}{\left(\frac{w_a}{h_a}\right)^{\frac{w_a}{h_a}}}\quad(\because w_a\leq m_a; w_a\geq h_a)=\left(\frac{m_a}{w_a}\right)^{\frac{w_a}{h_a}}=\left[1+\left(\frac{m_a}{w_a}-1\right)\right]^{\frac{w_a}{h_a}}$$

$$\underset{Bernoulli}{\geq}1+\frac{w_a}{h_a}\left(\frac{m_a}{w_a}-1\right)=1+\frac{m_a}{h_a}-\frac{w_a}{h_a}$$

$$\therefore\left(\frac{m_a}{h_a}\right)^{\frac{m_a}{h_a}}\cdot\left(\frac{w_a}{h_a}\right)^{-\frac{w_a}{h_a}}+\frac{w_a}{h_a}\geq1+\frac{m_a}{h_a}-\frac{w_a}{h_a}+\frac{w_a}{h_a}=1+\frac{m_a}{h_a}$$