

Problem Session 2.

Use the theorem of the means to show

$$\sum (a_i + b_i) \sum \frac{a_i b_i}{(a_i + b_i)} \leq \sum a_i \sum b_i$$

with equality only if \vec{a}, \vec{b} are linearly dependent.

Prove $\lim_{r \rightarrow \infty} \frac{M_{r+1}(\vec{a})}{M_r(\vec{a})} = M_\infty(\vec{a}) = \text{Max } a_i.$