

2017 MIG Oral Proof Round

Prove that for any two nonnegative real numbers x and y , the following always holds:

$$\frac{x + y}{2} \geq \sqrt{xy}$$

Bonus: Prove that for any set of nonnegative real numbers a_1, a_2, \dots, a_n , the following always holds:

$$\frac{a_1 + a_2 + \dots + a_n}{n} \geq \sqrt[n]{a_1 a_2 \dots a_n}$$