

Quiz 1

Tuesday, January 22, 2019

3:26 PM

Let a_1, \dots, a_n ($n \geq 2$)

be distinct real numbers

with average m . Show there

is at least one $a_i > m$.

Solution. Suppose not, in

which case $a_i \leq m$ for all

$i = 1, \dots, n$. Since a_1, \dots, a_n

are distinct at least one $a_i < m$,

which means that $a_1 + \dots + a_n < nm$

or $\frac{a_1 + \dots + a_n}{n} < m$, a contradiction

Thus $a_i > m$ for at least one index

$i = 1, \dots, n$.