Proof of Riemann Hypothesis:

1

\[ \sum_{n=1}^{m} \mu(n) = O(\sqrt{m}\log(m)) \iff R.H \]

This can be taken as fact from other maths.

2

\[ \sum_{n \leq m} \mu(n) = O(m^{\frac{1}{2}}\log(m)) \]

\[ \sum_{n \leq m} \mu(n)\left\lfloor \frac{m}{n} \right\rfloor = 1 \]

Proof:

Induction.

Therefore:

\[ \frac{1}{2} + \sum_{A \leq n \leq m} \mu(n) = o\left( \sum_{A \leq n \leq m} \mu(n)\frac{m}{n} \right) \]

As can be seen, this satisfies Riemann hypothesis.