MATH 173, FALL 2022, HOMEWORK #12

ALEX IOSEVICH

1. PROBLEMS NOT FROM THE BOOK

Problem #1: Let a_1, a_2, \ldots, a_N be a sequence of positive real numbers. Let

$$\mu = \frac{1}{N} \sum_{i=1}^{N} a_i.$$

Let λ be a positive real number. Prove that

$$\#\{i:a_i > \lambda\} \le N \cdot \frac{\mu}{\lambda}.$$

Give some examples where this inequalities is pretty close to best possible, and examples where it is not. I am aware of the fact that I am not making the notion of "pretty close" precise.

2. PROBLEMS FROM THE BOOK

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Section 5.2, problems 1, 2, 3, 4, 5, 8, 12 Section 5.3, problems 1, 2, 5, 6