

**MATH 568 INTRODUCTION TO NUMBER
THEORY II, SPRING TERM 2007, PROBLEMS 8**

Return by Tuesday 27th March

1. Let $M(x) = \sum_{n \leq x} \mu(n)$. Prove that $M(x) = o(x)$ as $x \rightarrow \infty$. Hint: Use $\zeta(s)^{-1} = \sum_{n=1}^{\infty} \mu(n)n^{-s}$ and imitate the proof of the prime number theorem.