

**M3PM16/M4PM16 ASSESSED COURSEWORK, 2013**

Th 28 February (Week 7); deadline 12 noon, Th 14 March (Week 9)

Prove Mertens' formula with remainder term:

$$\prod_{p \leq x} \left(1 - \frac{1}{p}\right) = \frac{e^{-\gamma}}{\log x} \left(1 + O\left(\frac{1}{\log x}\right)\right).$$

You may use the results of L14: Mertens' Second Theorem, and the Constants Lemma from the course website.

NHB