m3pm16prob9.tex

M3PM16/M4PM16 PROBLEMS 10. 19.3.2015

Q1. By following the method in the Assessed Coursework, or otherwise, show that from PNT-R follows

$$p_{n+1} - p_n = O(p_n \log p_n . e^{-c\sqrt{\log p_n}}) = O(n \log^2 n . e^{-c\sqrt{\log n}}).$$

Q2. How does this improve on Bertrand's postulate (now a theorem), that there is always a prime p between n and $2n$?

NHB