

Mathematics 3790H – Analysis I: Introduction to analysis
TRENT UNIVERSITY, Winter 2014

Assignment #5

Due on Friday, 14 February, 2014.

1. The Euler-Mascheroni constant is $\gamma = \lim_{n \rightarrow \infty} \left(\left(\sum_{i=1}^n \frac{1}{i} \right) - \ln(n+1) \right)$. Explain – informally, but accurately – why this limit converges. [5]
2. Prove the Divergence Test for series: If $\lim_{n \rightarrow \infty} a_n \neq 0$ (including the possibility that the limit does not exist), then $\sum_{n=0}^{\infty} a_n$ does not converge. [5]