

MATH 320, FALL 2017 PRACTICE MIDTERM 2

NOVEMBER 7

Each problem is worth 10 points.

Problem 3. (10 points) State the alternating series test. Using this, or otherwise, prove that the limit

$$\lim_{N \rightarrow \infty} \left(\sum_{n=1}^N \frac{1}{n} - \log N \right)$$

exists and is finite. (Remark: this number is called Euler's constant.)

