

MATH 409 Homework 4

1. Which of the following series converge (give reasons for your answers)

a) $\sum \frac{(-1)^n}{n^{(1+1/n)}}$ b) $\sum \frac{e^{1/n}}{n^2}$ c) $\sum (-1)^n \frac{n!}{n^n}$
d) $\sum \frac{1}{n^{(1+1/n)}}$ e) $\sum \frac{\log(n)}{n^{3/2}}$ f) $\sum (1 - e^{-1/n})$

2. For which values of x do the following series converge

a) $\sum nx^n$ b) $\sum \frac{x^n}{n}$ c) $\sum n^n x^n$

3. Rearrange the alternating harmonic series $\sum_1^{\infty} \frac{(-1)^{n-1}}{n}$ to converge to the value $1/2$.

Show enough terms to convince that you have the correct idea.