MAT229 Quiz 09, Spring 2025

Name:

1. (4 pts) Use a comparison test to determine whether the following series converge or diverge. (Do not use the Integral test!)

   a. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{(n\ln(n))^2}$

   b. $\displaystyle\sum_{n=1}^{\infty} \frac{e^n}{1+e^{2n}}$

2. (2 pts) Use limit comparison to decide the convergence of $\displaystyle\sum_{n=1}^{\infty} \frac{\ln(1+\frac{1}{n})}{n}$ (try a p-series).

3. (4 pts) For the following series, find the value of n such that it converges to within 0.0001 of its limit.

a. $\sum_{n=1}^{\infty}(-1)^{n+1}\frac{1}{n^2}$

b. $\sum_{n=2}^{\infty}(-1)^{n+1}\frac{1}{\ln(n)}$