408L CLASS PROBLEMS

APRIL 6TH, 2020

Problem 1. Does $\sum_{n=1}^{\infty} \frac{1}{n^2}$ converge or diverge? If it converges, find an upper bound for its value.

Problem 2. Does $\sum_{n=1}^{\infty} ne^{-n}$ converge or diverge? If it converges, find an upper bound for its value.

Problem 3. Does the series:

$$1 + \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{3}} + \frac{1}{\sqrt{4}} + \frac{1}{\sqrt{5}} \dots$$

converge or diverge? If it converges, find an upper bound for its value.

Problem 4. Does $\sum_{n=2}^{\infty} \frac{1}{n \log(n)}$ converge or diverge? If it converges, find an upper bound for its value.

Problem 5. Does $\sum_{n=2}^{\infty} \frac{1}{n \log(n)^2}$ converge or diverge? If it converges, find an upper bound for its value.