Summer Term I | MA124 Calculus II
Kostadinov | Boston University

Quiz No.17

student:

Problem 1: State the Ratio Test for convergence.

Problem 2: Give the definition for what it means for a sequence to have a limit 0.

Problem 3: Give four examples -one of a bounded sequence, a sequence bounded below only, a sequence bounded above only, a sequence which is not in the any of the above three categories.

Problem 4: Give the statement of the theorem that relates the conditions bounded, increasing/decreasing/monotonic, convergent for a sequence.

Use Ratio Test on the series to explore for convergence (Pr5-Pr7):

Problem 5: $S = \sum_{n=1}^{\infty} \frac{1}{n^3}$

Problem 6: $S = \sum_{n=1}^{\infty} (-1)^n \frac{n^2}{2^n}$

Problem 7: $S = \sum_{n=1}^{\infty} (-1)^n \frac{3^{n-1}}{n^2}$

Problem 8: Fill the blanks:
The Integral Test
Let $S = \sum_{n=1}^{\infty} a_n$ be a series and f be a continuos, positive . . . . function on $[1, \infty)$ such that $f(\dots) = a_n$. Then the series S is convergent if and only if the ... . integral $\int_?^? f(x)dx$ is ....

Problem 9: Find a function with which to use test the series $S = \sum_{n=1}^{\infty} \frac{1}{n^3}$ for convergence with the integral test. Write the integral that should be evaluated.

Problem 10: Evaluate the integral from problem 9. What could you say about the convergence of the series in problem 9?