Math 222 Quiz 3

Feb 9, 2011

Your Name: *Your Section:*

Instructions: You have 20 minutes to solve the following problems and the total score is 10 points. There are bonus problems on the back.

1. Calculate the sums of the following two:
   1). $\sum_{n=0}^{\infty}(-1)^n\frac{5}{4^n}$ (3 pts)
   2). $\sum_{n=1}^{\infty}(\sqrt[n]{n}-\sqrt[n+1]{n+1})$ (2 pts)

2. Determine whether the serieses converge or diverge and give your reasons:
   1) $\sum_{n=5}^{\infty}\cos(\frac{1}{n})$ (2 pts) 2) $\sum_{n=1}^{\infty}\frac{1}{n(1+\ln^2 n)}$ (3 pts)

Bonus 1: Choose one for each of the following: A. $p \geq 1$ B. $p > 1$ C. $p \leq 1$ D. $p < 1$.
1). When does $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converge? (1 pt) 2). When does $\sum_{n=2}^{\infty} \frac{1}{n^p \ln^2 n}$ converge? (1 pt)
Bonus 2: If I tell you that $u_n = \frac{n+5}{n+3}$ is positive and decreasing, does the AST(Alternating Series Test) apply for $\sum_{n=1}^{\infty} (-1)^n \frac{n+5}{n+3}$? Why? Does this series converge? (2 pts)