# Math 1B Section 107 Quiz #7

Thursday, 11 October 2007

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Name: _____

1. **True or False** (1 pt each) For each of the following statements, decide if it is true or false. You do not need to show work: I will grade only your answers.

   (a) Let's say $0 \leq a_n \leq b_n$, and $\sum_{n=1}^{\infty} a_n = A$ and $\sum_{n=1}^{\infty} b_n = B$. If $A = B$, then $a_n = b_n$ for every $n$.

   (b) If $0 \leq a_n \leq f(n)$, where $f(x)$ is a continuous decreasing function on $x \in [1, \infty)$, such that $\int_1^{\infty} f(x)\,dx$ converges, then $\sum_{n=1}^{\infty} a_n$ converges.

   (c) If $0 \leq a_n \leq \pi/2$ and $\sum_{n=1}^{\infty} \sin(a_n)$ diverges, then $\sum_{n=1}^{\infty} a_n$ diverges.

For the next two questions, use either the **Limit Comparison Test** or the **Integral Test** to determine if the series converges or diverges. Be sure to check that the series satisfies the conditions necessary for the test.

2. (3 pts) $\displaystyle\sum_{n=1}^{\infty} \frac{\arctan(n)}{n^2 - \ln(n)}$

3. (4 pts) $\displaystyle\sum_{n=3}^{\infty} \frac{1}{n \ln n \ln(\ln n)}$