Quiz 3

Name:_____

1. Determine if the following series converge or diverge. Be sure to justify your answer.

(a) $\displaystyle\sum_{n=5}^{\infty} \frac{n^2+1}{n^2-n+1}$

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

2. Determine if the following series converges or diverges. Be sure to justify your answer.

$$\frac{1}{3} + \frac{2}{3^2} + \frac{3}{3^3} + \frac{4}{3^4} + \cdots$$

3. Suppose we are given two series $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ such that $a_n \leq b_n$ for all $n \geq 1$ and $\sum_{n=1}^{\infty} b_n$ converges. Explain why it is important that $a_n \geq 0$ for all n in order to apply the comparison test to conclude $\sum_{n=1}^{\infty} a_n$ converges.