MA 2733
Worksheet 5 – September 17, 2014

Name _____

1. Using the Integral Test.

   (a) Explain in 1-2 sentences why $\frac{1}{n} \geq \frac{1}{n \ln n} \geq \frac{1}{n(\ln n)^2}$ for $n \geq N$. What is N?

   (b) Discuss convergence of $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$.

   (c) Discuss convergence of $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^2}$.

2. For what values of x does it make sense to define $f(x) = \sum_{i=0}^{\infty} x^i$.

3. Discuss convergence of $\sum_{n=1}^{\infty} \frac{1}{2n^2 + 100n}$.

4. Discuss convergence of $\sum_{j=1}^{\infty} \left(\sqrt{j} - \sqrt{j+1} \right)$ and $\sum_{m=8}^{\infty} \left(\frac{1}{\sqrt[3]{m}} - \frac{1}{\sqrt[3]{m+1}} \right)$.