MA 2733
Worksheet 8 – November 1, 2013

Name _____

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

2. Discuss convergence of $\sum_{k=1}^{\infty} \frac{1}{k^{1.01}}$.

3. Discuss convergence of $\sum_{j=1}^{\infty} \left(\sqrt{j} - \sqrt{j+1}\right)$ and $\sum_{m=2}^{\infty} \left(\frac{1}{\sqrt{m}} - \frac{1}{\sqrt{m+1}}\right)$.

4. (a) Using the Integral Test, discuss convergence of $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$.

(b) Using the Integral Test, discuss convergence of $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^2}$.

(c) Explain why Direct Comparison with a series of the form $\sum_{n=1}^{\infty} \frac{1}{n^p}$ will not help you determine convergence of the series in the previous 2 parts.