

MA 2733

Worksheet 6 – October 1, 2014

Name \_\_\_\_\_

1. For what values of  $x$  does it make sense to define  $f(x) = \sum_{n=1}^{\infty} \frac{x^n}{n \cdot 2^n}$ .

2. Discuss convergence of  $\sum_{k=0}^{\infty} \frac{1}{k + \sqrt{k} - 1}$ .

3. Discuss convergence of  $\sum_{n=0}^{\infty} \frac{n}{4^n}$ .

(Hint for using Direct Comparison:  $4^n = 2^n \cdot 2^n$ .

We'll also see an easier way to do this a little bit later on.)

4. Explain why Direct Comparison with  $\sum \frac{1}{4^n}$  will not help you in Problem 3.

5. In 1-3 sentences, explain the relationship between the Direct Comparison Test and the Monotone Convergence Theorem.