

MA 2733

Worksheet 2 – September 13, 2016

Name _____

1. Find $\sum_{n=2}^{\infty} \sin^n(2\pi/3)$ and $\sum_{n=5}^{\infty} \sin^n(3\pi/2)$.

2. Write the repeating decimal $0.\overline{53} = 0.535353\dots$ as a geometric series, and then as a fraction.

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

4. (a) Find an interval on which the function $f(x) = 1/x$ is continuous, positive, and decreasing.

(b) Using the Integral Test, determine whether $\sum_{n=1}^{\infty} \frac{1}{n}$ converges.

5. Explain in a few sentences why $\frac{1}{n} \geq \frac{1}{n^2} \geq \frac{1}{n^2 + 2n} \geq \frac{1}{3n^2}$ for any $n \geq 1$.