MA 2733
Worksheet 4 – September 10, 2014

Name _____

1. Calculate the limits of the following sequences:

   (a) $\lim\limits_{n\to\infty} \dfrac{2n^3 + 3n^2 + 4}{6n^3}$.

   (b) $\lim\limits_{n\to\infty} \dfrac{\sin n + \cos n}{n}$.

2. Reindex $\displaystyle\sum_{n=1}^{\infty} \dfrac{2^{n-1}}{n!}$ to be of the form $\displaystyle\sum_{n=0}^{\infty} a_n$.

3. (a) Using sigma notation, write a series summing the even terms of $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n}$. I.e., find

a series $\displaystyle\sum_{n=1}^{\infty} a_n = \frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \dots$.

(b) Using sigma notation, write a series summing the odd terms of $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n}$. I.e., find a

series $\displaystyle\sum_{n=1}^{\infty} b_n = 1 + \frac{1}{3} + \frac{1}{5} + \dots$.