MAT 1322 S   <u>**Assignment 3**</u> (Due JUNE 16th at 19:00)   **Student Number**:

NO Late Assignments!!!!!!

1. Determine whether the series converges or diverges. If it converges, find the sum.

(a) $\displaystyle\sum_{n=0}^{\infty} \frac{9^n + 8^n}{16^{n+4}}$

(b) $\displaystyle\sum_{n=1}^{\infty} \frac{-29}{n(n+4)}$

Work:

Answers: (a)   (b)

2. (a) Consider the sequence $a_n = \frac{n^6 + \sin(2011n)}{n^6 + 11111}$. Compute $\lim\limits_{n \to \infty} a_n$.

(b) Is $\sum\limits_{n=1}^{\infty} \frac{n^6 + \sin(2011n)}{n^6 + 11111}$ convergent? If it is convergent find it is sum, if it is divergent explain why!

3. Determine whether the series converges or diverges. Verify that the test used is applicable.

(a) $\displaystyle\sum_{n=2}^{\infty} \frac{21 + \sin(21n)}{n^{23} + 23n}$

(b) $\displaystyle\sum_{n=11}^{\infty} \frac{2011}{\ln(n^n)}$

Work:

Answers: (a)   (b)

4. Consider the series $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^5}$.

(a) Find the partial sum s_5 (use 6 decimals).

(b) Find a value of n such that s_n is within 0.0004.

Work:

Answers: (a)   (b)

$\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^5}$.