Serial No.:_____ Student Name:_____ Student Number: _____

Instructor: M. Z. Abu-Sbeih Math 102- Q4 Date: 15-5-2011

SHOW ALL WORK. NO CREDITS FOR ANSWERS NOT SUPPORTED BY WORK

Problem 1: (7 points) Use the integral test to show that the series is convergent. Find the number of terms needed for S_n to approximate the sum S with an error less than 0.001.

$$\sum_{n=1}^{\infty} \frac{1}{2n^2}$$

Problem 2: (18 points) determine whether the series is convergent or divergent. State the name the test you use.

(1) $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$

(2) $\sum_{n=1}^{\infty} \sqrt{\frac{n+1}{n^2+2}}$

(3) $\sum_{n=1}^{\infty} \frac{1+\sin n}{n^2}$