Math 221   EXAM 3

July 14, 2017

Student's Name:

Instructor's Name:

Q.N.	1	2	3	4	5	Total
Points						

Show all work in detail for full credit. No books and calculators are permitted. Use the back page as a sketch paper.

1.

(a) (6 points) Use divergent test to determine the following series diverges or inconclusive

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

(b) (6 points) Use integral test to determine the following series converges or diverges

$$\sum_{n=1}^{\infty} \frac{n}{3x^2 + 1}$$

2.

(a) (6 points) Use the comparison test to show the series converges or diverges

$$\sum_{n=1}^{\infty} \frac{sin(1/n)}{n}$$

(b) (6 points) Use the limit comparision test to whether following series converges or diverges

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

3 (12 points). Test the series whether converges absolutely or conditionally.

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

4.

(a) (6 points). Determine whether the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{n^3}{3^n}$$

(b) (6 points). Apply the root test to determine whether the folowing series converge or diverges

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

5. Find the radius of convergence and interval of convergence of power series

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