

# Math 2315 - Calculus II

Homework #11 - 2007.11.13

Due Date - 2007.11.20

Name: \_\_\_\_\_

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Part 1: Problems from sections 11.3 - 11.6

Part 2: The *fun* problems.

For problems 1 through 5, determine whether or not the series converges.

1.

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

2.

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

3.

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

4.

$$\sum_{n=4}^{\infty} (-1)^n \tan\left(\frac{1}{n}\right)$$

5.

$$\sum_{n=1}^{\infty} \frac{\cos\left(\frac{1}{n}\right)}{n^2}$$

6. For what values of  $x$  does the following sum converge?

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

7. For what powers  $k$  does the following converge?

$$\sum_{n=1}^{\infty} n^k 3^{-n}$$