

## MATH 2730 Assignment 3

**Due Monday, March 10, 2008, in class**

1. Which of the following series converges absolutely, which converges conditionally and which diverges? Justify your answers.

(a) 
$$\sum_{n=1}^{\infty} \frac{(-1)^{n+1}(0.1)^n}{n}$$

(b) 
$$\sum_{n=2}^{\infty} \frac{(-2)^{n+1}}{n+5^n}$$

(c) 
$$\sum_{n=1}^{\infty} (-1)^{n+1} \sqrt[n]{10}$$

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

2. Find the interval of convergence for the following power series.

(a) 
$$\sum_{n=0}^{\infty} \frac{(x-2)^n}{10^n}$$

(b) 
$$\sum_{n=0}^{\infty} \frac{(2x+3)^{2n+1}}{n!}$$

(c) 
$$\sum_{n=1}^{\infty} (n)^n x^n$$

For the series 
$$\sum_{n=0}^{\infty} \frac{(x-2)^n}{10^n}$$
 (in part a above), find the sum of the series as a function on x.