Math 250 Quiz 7 Spring 2000

Name: _____ ID #: _____

NO CALCULATORS

1. [10 points each] Determine the convergence or divergence of each of the series.

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

   b) $\displaystyle\sum_{n=2}^{\infty} \frac{\ln n}{n^3}$

   c) $\displaystyle\sum_{n=1}^{\infty} \frac{4^n}{n!}$

   d) $\displaystyle\sum_{n=1}^{\infty} \frac{(n!)^3}{(3n)!}$

   e) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n \ln n^3}$

2. [10 points each] Find the interval of convergence of the following series. Be sure to check the end points.

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

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

3. [10 points each] Find the Taylor series of each of the functions below, centered about the indicated point. Express your answer in Σ notation.

a) $\sin(x)\cos(x)$, centered about $c = 0$. Hint: use a trig identity.

b) $\frac{e^{x^2}-1}{x}$, centered about $c = 0$.

c) $\frac{3x-6}{2x+1}$, centered about $c = 2$.