MATH141(0332) Calculus II

Quiz 9, Thursday, November 13, 2008 Name: _____

Show all work clearly and in order, and circle your final answers. Justify your answers algebraically whenever possible. Calculator is not allowed in this quiz. You have 25 minutes to take this 12 point quiz. Only 10 points will count. An extra point is offered in Question 4.

1. (*4 points*) Estimate the 5th trancation error for the series $\sum_{n=1}^{\infty} ne^{-n}$.
Hint: You might use integral by parts. You can use $e^{-4} = 0.0183, e^{-5} = 0.0067, e^{-6} = 0.0025$.

2. (*4 points*) Determine whether the following series converges or diverges.
Hint: You may use comparation rule and then use limit comparation rule.

$$\sum_{n=1}^{\infty} \frac{[sin(n) + cos(5n)]\sqrt[3]{7n^2+5}}{4n^2+2n+3}$$

3. (*4 points*) Determine whether the following series converges or diverges.
Hint: You may try to prove that $n!/n^n \leq 1/2$ when $n \geq 2$.

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

4. (*1 point*) (Extra point)
Can you find a series which converges but not converges absolutely? Construct the series and briefly prove the statement. (Use the back side of the paper to answer this question).