

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

CALCULUS II, SECTION K

Quiz # 1

August 27th, 2008

First Name : -----

Last Name : -----

1. Give the Taylor series for

$$\frac{e^x + e^{-x}}{2} =$$

2. If $p(x) = 1 - x + x^2/2 - x^3/3! + x^{13}/13! - 56x^{23}/23!$ give the value of

$$p^{(23)}(0) =$$

3. Give the Taylor expansion to order 2 for

$$(1 - x/2)^{1/2}$$

4. Give the Taylor *polynomial* up to order n of

$$\ln(1 + x) =$$

5. One will admit that the remainder R_n of the previous expansion, in question 4, has the sign of $(-1)^n$ and is bounded by

$$|R_n| \leq \frac{x^{n+1}}{(n+1)}$$

Use question 4, with $n = 2$, to compute the number $\ln 5 - 2 \ln 2$ with less than 1% of error. (Use $x = 1/4$ and $1/32 = .03125$, $1/192 \leq .0052$)