

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

## CALCULUS II, SECTION D

## Quiz # 2

September 8th 2010

First Name : -----

Last Name : -----

1. Is the following integral convergent ?

(Hint : there are two singularities)

$$\int_{x=0}^1 \frac{dx}{x^{3/4}(1-x)^{1/4}} =$$

Converges

Diverges

2. Compute the 54-th derivative of  $g$  at  $x = 0$  if

(Hint : there is a little trap here!)

$$g(x) = 31 - 54 \frac{x^{111}}{111!} + 123 \frac{x^{191}}{191!}$$

$$g^{(54)}(0) =$$

3. Give the Taylor *expansion* to order  $3n$ , including the remainder for  
(*Hint : gives the exact expression of the remainder, without integrals*)

$$\frac{1}{1 - x^3} =$$

4. Give the Taylor *expansion* to order  $2n + 1$  for

$$\ln \left\{ \frac{1 + x^2}{1 - x^2} \right\} =$$

5. Give the Taylor *expansion* to order 2, **near**  $x = \pi/6$ , for

$$\cos x =$$