

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502 F

## CALCULUS II

## Quiz # 4

September 19th, 2007

First Name : .....

Last Name : .....

Section &amp; TA's name : .....

1. Compute the radius of convergence of ?

(Give the test justifying your answer)

$$\sum_{k=1}^{\infty} \frac{\sin(2\pi k/13)}{(k^4 + 1)^{2/7}} x^k$$

2. (a) Compute the derivative of the function

$$f(x) = \frac{1}{2} \ln \left\{ \frac{1+x}{1-x} \right\}$$

$$f'(x) =$$

(b) Give the Taylor series near  $x = 0$  of

$$\frac{1}{1-x^2} =$$

(c) From the previous question, deduce the Taylor expansion of  $f$

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

3. Is the following series absolutely convergent?  
Conditionally convergent? Why?

$$\sum_{k=1}^{\infty} (-1)^{k-1} \frac{1}{\sqrt{k}}$$