

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

CALCULUS II, SECTION D

Quiz # 3

September 15th 2010

First Name : _____

Last Name : _____

1. Is the following series convergentS?

(what criterion are you using?)

$$\sum (-1)^k \frac{(k^3 + 1)^{1/3}}{(k^5 + 2k + 37)^{1/5}}$$

2. Is the following series convergent or not? (*what criterion are you using?*)

$$\sum \frac{1}{(k^3 + 1)^{1/3} \ln^2(k^2 + 1)}$$

3. Is the following series convergent or not? (*what criterion are you using?*)

$$\sum \frac{3^k + 2^k}{4^k}$$

4. Is the following series convergent or not? (*what criterion are you using?*)

$$\sum \frac{k^6 + 2k^5 - 4k + 1}{(k^8 + 3k^2 - 1)^{13/16}}$$

5. Let $\sum a_k$ be a series with nonnegative terms.
Show that if $\sum a_k^2$ converges then $\sum a_k/k$ also converge?
(*Hint : use the inequality $bc \leq (b^2 + c^2)/2$ valid for $b, c \geq 0$*)