Georgia Tech   School of Mathematics

Calculus II, Section K
Quiz # 3
September 15th 2010

First Name : _____

Last Name : _____

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

$$\sum (-1)^k \frac{(k^3 + 53)^{2/3}}{(k^5 - 2k + 13)^{2/5}}$$

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

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

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

$$\sum \frac{3^k + 4^k}{5^k}$$

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

$$\sum \frac{k^{11} + k^6 - 3k + 2}{(k^9 + k^2 - 1)^{23/18}}$$

5. Let $\sum a_k$ be a series with nonnegative terms.
Show that if $\sum a_k^2$ converges then $\sum a_k/(k^{3/4})$ also converges ?
(*Hint : use the inequality* $bc \leq (b^2 + c^2)/2$ *valid for* $b, c \geq 0$)