Quiz 10 on Calculus II

Summer 2009

Name: ________________________________

You may use any resources, including the text, notes, or homework problems, and you are encouraged to work with other students or get outside help. However, you must write up your own solutions. In order to get full credit you must show all your steps.

1. Find the values of $x$ for which the series

$$\sum_{n=0}^{\infty} 4^n x^n$$

is convergent.

2. Determine whether the series is convergent or divergent. If it is convergent, find its sum.

$$\sum_{n=1}^{\infty} \frac{(-2)^n}{3^n}$$
3. Determine whether the series is convergent or divergent by expressing $s_n$, the $n$th partial sum, as a telescoping sum. If the series is convergent, find its sum.

$$\sum_{n=2}^{\infty} \frac{4}{n^2 - 1}$$

For problems 4-10, determine whether the series converges or diverges. Be sure to show your logic and name any tests you use.

4. 

$$\sum_{n=1}^{\infty} \frac{2n}{n^2 + 3}$$
5. \[ \sum_{n=1}^{\infty} (-1)^n \frac{n}{10^n} \]

6. \[ \sum_{n=1}^{\infty} \frac{2}{n^{0.76}} \]

7. \[ \sum_{n=1}^{\infty} \frac{5 - 2n\sqrt{n}}{n^2} \]
8. \[
\sum_{n=1}^{\infty} \frac{\cos^2 n}{n^2 + 1}
\]

9. \[
\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2n + 1}
\]

10. \[
\sum_{n=1}^{\infty} \frac{1}{\sqrt{n^2 + 1}}
\]