Quiz 10 Problem # 1

Name: _____ Group Members: _____

Date: _____ _____

Show all work for full credit.

Fill in the blanks with the correct statement of the integral test.

The Integral Test:

If $f(x)$ is continuous, positive, and _____ on $[1, \infty)$, and $f(n) = a_n$, then

(i) If $\int_1^\infty f(x)dx$ is convergent, then _____ is also convergent.

(ii) If $\int_1^\infty f(x)dx$ is divergent, then _____ is also divergent.

Determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty} n^3 e^{-n^2}$$

Quiz 10 Problem # 2

Name: _____ Group Members: _____

Date: _____ _____

Fill in the blanks with the correct statement of the Comparison test. (Note, two of the blanks below should be filled in with "the comparison test tells us NOTHING!")

The Comparison Test:

Suppose $\sum a_n$ and $\sum b_n$ are series with POSITIVE terms.

(i) If $a_n \leq b_n$ and the series $\sum b_n$ is divergent, then _____.

(ii) If $a_n \leq b_n$ and the series $\sum a_n$ is divergent, then _____.

(iii) If $a_n \leq b_n$ and the series $\sum b_n$ is convergent, then _____.

(iv) If $a_n \leq b_n$ and the series $\sum a_n$ is convergent, then _____.

Determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty} \frac{\cos^2(n)}{n\sqrt{n}}$$

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

Quiz 10 Problem # 3

Name: _____ Group Members: _____

Date: _____ _____

Fill in the blanks with the correct statement to the limit comparison test. (Note: in some blanks you should enter "the limit comparison test tells us NOTHING!")

Limit Comparison test:

Suppose $\sum a_n$ and $\sum b_n$ are series with _____ terms.

If $\lim_{n\to\infty} \frac{a_n}{b_n} = 0$, then _____.

If $\lim_{n\to\infty} \frac{a_n}{b_n} = c$ where c is finite and $c > 0$, then _____.

If $\lim_{n\to\infty} \frac{a_n}{b_n} = \infty$, then _____.

Determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty} \frac{n+1}{\sqrt{n^4+3n+12}}$$