MATH 107 Quiz 10

Name:________________________ Score:________________

Instructions: You must show supporting work to receive full and partial credits. No text book, notes, formula sheets allowed. One point to each question.

(1) A geometric series $\sum ar^k$ converges if **(a)** $r > 0$; **(b)** $|r| > 1$; **(c)** $-1 < r < 1$.

(2) If $\lim a_k = 0$, then the series $\sum a_k$ **(a)** converges; **(b)** diverges; **(c)** may or may not converge.

(3) In order to use the integral test for a series $\sum a_k$, the following conditions must satisfy: **(a)** $f(k) = a_k$, **(b)** $f(x) \geq 0$, **(c)** f is continuous, **(d)** and f is ______________.

(4) If $\sum |a_k|$ converges, then **(a)** $\sum(-1)^k a_k$ converges; **(b)** $\sum(-1)^k a_k$ diverges; **(c)** $\sum(-1)^k a_k$ may or may not converge.

(5) If $a_k \geq 0$ and $\lim a_k = 0$, then $|S_n - S| < a_{n+1}$ holds **(a)** always; **(b)** a_k is monotone decreasing; **(c)** some of the times.

(6) If $0 \leq a_k \leq b_k$ and $\sum a_k$ converges, then $\sum b_k$ **(a)** converges too; **(b)** diverges; **(c)** may or may not converge.

(7) If $\lim |a_{k+1}/a_k| = L \neq 0$, then the power series $\sum a_k(x-c)^k$ converges for **(a)** $c - 1/L < x < c + 1/L$; **(b)** $c - L < x < c + L$; **(c)** $x = c, L$ only.

(8) If $\lim |b_k/a_k| = L \neq 0$, and $\sum a_k$ converges absolutely, then $\sum b_k$ **(a)** converges conditionally; **(b)** converges absolutely; **(c)** diverges.

(9) $\sum(-1)^k 1/k^p$ **(a)** converges absolutely for $p \geq 1$; **(b)** converges absolutely for $p > 1$; **(c)** diverges $0 < p \leq 1$;

(10) If $\lim a_k = 10$, then **(a)** $\sum a_k = 10$; **(b)** $\sum(-1)^k a_k = 0$; **(c)** $\lim a_{k+1}/a_k = 1$.

(*... The End*)