Math 1450, Honor Calculus Practice16, Fall 2016.

November 28, 2016

PSID: _____ Name: _____

1. Find the sum of the following (if possible):

   a. $\sum_{k=0}^{\infty} \left(-\frac{3}{4}\right)^k$

   b. $\sum_{k=2}^{\infty} \left(\frac{2}{3}\right)^k$

   c. $\sum_{k=0}^{\infty} \left(\frac{5}{4}\right)^{k+1}$

   d. $\sum_{k=2}^{\infty} \left(\frac{1}{n} - \frac{1}{n+2}\right)$

   e. $\sum_{k=0}^{\infty} \frac{6^{k+1}}{7^{k-2}}$

2. Determine whether the given series converges or diverges; state which test you are using to determine convergence/divergence and show all work.

   a. $\sum_{n=0}^{\infty} \frac{k^2 2^k}{(k+1)!}$

   b. $\sum_{n=0}^{\infty} \frac{3^{k+1}}{(k+1)^2 e^k}$

   c. $\sum_{n=1}^{\infty} \frac{\ln(n)}{n}$

d. $\displaystyle\sum_{n=0}^{\infty} \frac{2n+1}{\sqrt{n^5+3n^4+1}}$

e. $\displaystyle\sum_{n=2}^{\infty} \frac{4n^2+1}{n^3-n}$

f. $\displaystyle\sum_{n=2}^{\infty} \frac{4n^2+1}{n^5-n}$

g. $\displaystyle\sum_{n=1}^{\infty} \left(1+\frac{1}{n}\right)^k$

h. $\displaystyle\sum_{n=0}^{\infty} \frac{n^3}{3^n}$

i. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{\sqrt[4]{n^3}}$

3. Determine if the following series (A) converge absolutely, (B) converge conditionally or (C) diverge.

a. $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+1}\sqrt{n}}{n+3}$

b. $\displaystyle\sum_{n=1}^{\infty} \frac{\cos \pi n}{n^2}$

c. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n 4n}{3n^2+2n+1}$

d. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n 3}{\sqrt{3n^2+2n+1}}$

e. $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n 3n}{\sqrt{3n^2+2n+1}}$