Universidade Federal de Campina Grande - UFCG
Unidade Acadêmica de Matemática - UAMat

Disciplina: *Cálculo II*

Professor: *Jefferson Abrantes*

Lista de Exercícios para a Segunda Avaliação

1. Quais séries convergem? E quais divergem?

a) $\displaystyle\sum_{n=2}^{\infty}\left(\frac{1}{n\,(\ln n)^2}\right)$

b) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{1}{n^2-1}\right)$

c) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{-2}{n\sqrt{n}}\right)^n$

d) $\displaystyle\sum_{n=0}^{\infty}\left(e^{-n}\right)$

e) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{8\arctan n}{n^2+1}\right)$

f) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{n}{n^2+1}\right)$

g) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{n-2}{n^3-n^2+3}\right)$

i) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{2^n}{3+4^n}\right)$

j) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{\sqrt{n}+1}{\sqrt{n^2+3}}\right)$

k) $\displaystyle\sum_{n=1}^{\infty}\left(ln\left(1+\frac{1}{n^2}\right)\right)$

l) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{(\ln n)^3}{n^4}\right)$

m) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{2^n}{n!}\right)$

n) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{2^n}{n3^{n-1}}\right)$

o) $\displaystyle\sum_{n=2}^{\infty}\left(\frac{3^{n+2}}{\ln n}\right)$

p) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{n}{n^2+1}\right)$

q) $\displaystyle\sum_{n=1}^{\infty}\left(1-\frac{1}{n}\right)^{n^2}$

r) $\displaystyle\sum_{n=1}^{\infty}\left(\sin\left(\frac{1}{\sqrt{n}}\right)\right)^{n}$

s) $\displaystyle\sum_{n=1}^{\infty}\left(e^{-n}n^3\right)$

t) $\displaystyle\sum_{n=1}^{\infty}\left(\frac{(n!)^n}{(n^n)^2}\right)$

2. (**Questão desafio**)Use o teste da integral para mostrar que a série

$$\sum_{n=0}^{\infty}\left(e^{-n^2}\right)$$

converge.

Bons Estudos!