CENTRO FEDERAL DE EDUCAÇÃO TECNOLÓGICA DE MINAS GERAIS
CAMPUS V – DIVINÓPOLIS

Cursos: Engenharia Mecatrônica e Engenharia de Computação   Professor: Guilherme B Almeida
Disciplina: Integração e Séries   02/2023   Lista 7 –Convergência de Séries

Em cada item, determine se a série converge ou diverge.

a)

$$\sum_{k=1}^{\infty} \frac{1}{5k^2 - k}$$

b)

$$\sum_{n=0}^{\infty} \frac{\pi^n}{3^{n+1}}$$

c)

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

d)

$$\sum_{k=1}^{\infty} \frac{4k^2 - 2k + 6}{8k^7 + k - 8}$$

e)

$$\sum_{k=1}^{\infty} \frac{k!}{k^3}$$

f)

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

g)

$$\sum_{k=1}^{\infty} \frac{k}{5^k}$$

h)

$$\sum_{k=1}^{\infty} \frac{\sqrt{k}}{k^3 + 1}$$

i)

$$3 + 4 + \frac{16}{3} - \frac{64}{9} + \cdots$$

j)

$$\sum_{k=1}^{\infty} \frac{1}{3^k + 5}$$

l)

$$\sum_{k=1}^{\infty} \frac{1}{5k}$$

m)

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

n)

$$\sum_{k=1}^{\infty} \frac{3^k}{k!}$$

o)

$$10 - 2 + 0{,}4 - 0{,}08 + \cdots$$

p)

$$\sum_{n=1}^{\infty} \frac{(-3)^{n-1}}{4^n}$$

q)

$$\sum_{n=1}^{\infty} (-1)^n \frac{n}{10^n}$$

r)

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

s)

$$\sum_{n=1}^{\infty} \frac{1 + 2^n}{3^n}$$

t)

$$\sum_{n=1}^{\infty} \frac{2}{n^{0,85}}$$

u)

$$\sum_{n=1}^{\infty} \frac{1}{\sqrt[5]{n}}$$

v)

$$\sum_{n=1}^{\infty} \frac{1}{(2n + 1)^3}$$

w)

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

x)

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

y)

$$\sum_{n=1}^{\infty} \frac{\ln n}{n^3}$$

z)

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

a.2)

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

b.2)

$$\sum_{k=1}^{\infty} k \left(\frac{2}{3} \right)^k$$

c.2)

$$\sum_{n=1}^{\infty} \frac{n^{100} 100^n}{n!}$$