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MATH 1360 - 80
Prof. Milena Gomez

Assignment 5.1

Ejercicios de Práctica:

Demuestre si las siguientes series son convergentes o divergentes

1. $1 + \frac{1}{8} + \frac{1}{27} + \frac{1}{64} + \frac{1}{125} + \dots$

2. $\frac{1}{5} + \frac{1}{8} + \frac{1}{11} + \frac{1}{14} + \frac{1}{17} + \dots$

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

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

5. $\sum_{n=1}^{\infty} ne^{-n}$

1) $n = 2^3 = 8$
 $n = 3^3 = 27$
 $n = 4^3 = 64$

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

$p = 3 > 1$ Convergente

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

$5+3=8$
 $3+2=5$
 $3 \cdot 2 + 2 = 6+2=8$
 $3 \cdot 3 + 2 = 9+2=11$
 $3 \cdot 4 + 2 = 12+2=14$

$a_n = \frac{1}{3n+2}$ y $b_n = \frac{1}{n}$

$$\lim_{n \rightarrow \infty} \left(\frac{a_n}{b_n} \right) = \lim_{n \rightarrow \infty} \frac{n}{3n+2} = \lim_{n \rightarrow \infty} \frac{1}{3 + \frac{2}{n}} = \frac{1}{3}$$

$P=1$
Divergente.



