

Homework

1) Find the interval of convergence and radius of convergence of the following series:

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

b) $\sum_{n=1}^{\infty} \frac{(1+5^n)}{n!} x^n$

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

2) Test for convergence the following series:

a) $\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n)!}$, b) $\sum_{n=0}^{\infty} (-1)^n \frac{3^n}{n!}$

c) $\sum_{n=1}^{\infty} \frac{100 \cos(n\pi)}{2n+3}$, d) $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^3 + \ln n}$

e) $\sum_{n=0}^{\infty} \frac{n!}{n^2 e^n}$, f) $\sum_{n=0}^{\infty} \frac{1+n!}{(1+n)!}$

g) $\sum_{n=1}^{\infty} \frac{1}{n^2+4}$, h) $\sum_{n=1}^{\infty} \frac{1+n}{2+n}$

i) $\sum_{n=1}^{\infty} \frac{1}{2^n n!}$, j) $\sum_{n=1}^{\infty} \frac{(2n)!}{(n!)^3}$