UNIVERSITÀ DEGLI STUDI ROMA TRE - MATEMATICA

ESERCIZI DI AM120

A.A. 2025/2026 - ESERCITAZIONE IV

Esercizio Stabilire il carattere delle seguenti serie:

(1) $\displaystyle\sum_{n=1}^{+\infty} \frac{n^2(x+1)^n}{3^n+\sqrt{n^2-1}} \quad (x \in \mathbb{R})$;

(2) $\displaystyle\sum_{n=1}^{+\infty} \frac{n^n}{2^n(n!)^\alpha} \quad (\alpha \in \mathbb{R})$;

(3) $\displaystyle\sum_{n=1}^{+\infty} \frac{n^2}{(1+n^3)(\ln(1+2^{-n}))^\beta} \quad (\beta \in \mathbb{R})$;

(4) $\displaystyle\sum_{n=1}^{+\infty} \frac{n^2\ln(1+2^n)}{(1+n^3)^\beta} \quad (\beta \in \mathbb{R})$;

(5) $\displaystyle\sum_{n=1}^{+\infty} \frac{n^{x-2}+n^{4-x^2}}{n^2} \quad (x \in \mathbb{R})$;

(6) $\displaystyle\sum_{n=1}^{+\infty} \frac{2^{n^x}-1}{n^{nx}+1} \quad (x \in \mathbb{R})$;

(7) $\displaystyle\sum_{n=1}^{+\infty} \frac{\ln(1+x^{2n})}{n^x+n} \quad (x \in \mathbb{R})$;

(8) $\displaystyle\sum_{n=1}^{+\infty} \left(\frac{\sinh(x^n)}{\ln(\sqrt{n})}+\frac{\sqrt{n}}{x^n+n^2}\right) \quad (x \in \mathbb{R})$;