Es. 5 $\displaystyle\sum_{n=0}^{\infty} \frac{\lg(1+n^2)}{3^n+n^2+5^n}(x-1)^n$

$a_n = \dfrac{\lg(1+n^2)}{3^n+n^2+5^n}$

$\dfrac{a_{n+1}}{a_n} = \dfrac{\lg(1+(n+1)^2)}{3^{n+1}+(n+1)^2+5^{n+1}} \; \dfrac{3^n+n^2+5^n}{\lg(1+n^2)} \xrightarrow[n\to\infty]{} \dfrac{1}{5}$

$R = 5 \Rightarrow$ La serie converge assolutamente per $|x-1| < 5$

$x \in (-4, 6)$

$x = -4$ $\displaystyle\sum_{n=0}^{\infty} \frac{\lg(1+n^2)}{3^n+n^2+5^n}(-1)^n 5^n$ NON CONVERGE infatti

$b_n = \dfrac{5^n \lg(1+n^2)(-1)^n}{3^n+n^2+5^n} \underset{n\to\infty}{\not\to} 0 \Rightarrow$ CN non verificata

$x = 6$ $\displaystyle\sum_{n=0}^{\infty} \frac{\lg(1+n^2)}{3^n+n^2+5^n} 5^n$ non converge come sopra

La serie converge assolutamente e puntualmente $\forall x \in (-4, 6)$
converge totalmente $\forall x \in [-4+\delta, 6-\delta]$ $0<\delta<5$