

Esercizi sulle serie

Lista n.2 di martedì 26 marzo 2002

Studiare il carattere, eventualmente al variare dei parametri che vi compaiono, delle seguenti serie:

$$\boxed{34} \sum_{n=1}^{+\infty} \left(1 - \frac{1}{n^3}\right)^{n^4}$$

$$\boxed{35} \sum_{n=1}^{+\infty} n^{-\sqrt{n}}$$

$$\boxed{36} \sum_{n=2}^{+\infty} \frac{1}{\log(n!)}$$

$$\boxed{37} \sum_{n=1}^{+\infty} \frac{n!}{n^n}$$

$$\boxed{38} \sum_{n=1}^{+\infty} \frac{n^n}{(2n)!}$$

$$\boxed{39} \sum_{n=1}^{+\infty} \frac{1}{n^2} \left(\frac{n+2}{n+1}\right)^n$$

$$\boxed{40} \sum_{n=1}^{+\infty} \frac{\log(\log(n))}{n \log^2 n}$$

$$\boxed{41} \sum_{n=2}^{+\infty} \frac{1}{\sqrt{n}} \log\left(\frac{2n-1}{2n+1}\right)$$

$$\boxed{42} \sum_{n=2}^{+\infty} \frac{1}{(\log n)^{\log n}}$$

$$\boxed{43} \sum_{n=1}^{+\infty} \left(\frac{n^2+n-1}{n^2+3n+5}\right)^{n^2}$$

$$\boxed{44} \sum_{n=1}^{+\infty} \frac{n! a^n}{n^n}$$

$$\boxed{45} \sum_{n=1}^{+\infty} \frac{n! n^n}{(2n)!} a^n$$

$$\boxed{46} \sum_{n=1}^{+\infty} (-1)^n \frac{n}{n \log n + 1}$$

$$\boxed{47} \sum_{n=1}^{+\infty} \left(\sin \frac{a}{\sqrt{n}} + \log\left(1 + \frac{b}{\sqrt{n}}\right) - \cos \frac{1}{\sqrt{n}} + 1\right)$$

$$\boxed{48} \sum_{n=1}^{+\infty} \frac{(-1)^n \cos \frac{1}{n}}{n+1}$$

$$\boxed{49} \sum_{n=1}^{+\infty} (-1)^n \frac{\cos n}{1+n^2}$$

$$\boxed{50} \sum_{n=2}^{+\infty} (-1)^n \left(\frac{\pi}{2} - \arctan n\right)$$

$$\boxed{51} \sum_{n=1}^{+\infty} (-1)^n \frac{n^a}{1+n^b}$$

$$\boxed{52} \sum_{n=1}^{+\infty} \left(\left(1 + \sin \frac{1}{n}\right)^{\frac{1}{2}} - \left(1 + \frac{1}{n}\right)^{\frac{1}{2}}\right)$$

$$\boxed{53} \sum_{n=1}^{+\infty} \left(e - \left(1 + \frac{1}{n}\right)^n\right)$$

$$\boxed{54} \sum_{n=1}^{+\infty} \left(e - \sum_{k=0}^n \frac{1}{k!}\right)$$

$$\boxed{55} \sum_{n=1}^{+\infty} \frac{(-1)^n}{an + \sin n}$$

$$\boxed{56} \sum_{n=1}^{+\infty} (-1)^n \frac{1}{n^a + a^{n^2}}$$

$$\boxed{57} \sum_{n=1}^{+\infty} (-1)^n \left(\arctan n + a \log\left(2 + \frac{1}{n}\right) - \frac{b}{n}\right)$$

$$\boxed{58} \sum_{n=1}^{+\infty} \frac{(-1)^n}{n^\alpha + (-1)^n n^\beta}$$

$$\boxed{59} \sum_{n=1}^{+\infty} \frac{1 + \cos n}{n}$$

$$\boxed{60} \sum_{n=1}^{+\infty} \frac{\sin n}{n}$$

$$\boxed{61} \sum_{n=1}^{+\infty} \frac{\cos n}{n}$$

NOTA: alcune delle serie proposte in questa lista sono difficili e per studiarle può essere utile usare i risultati dei problemi teorici elencati nella lista successiva.