Esercizi su serie

Discutere la convergenza delle seguenti serie:

$$\sum_{k=1}^{\infty} \frac{1}{\sqrt{k^2+1}}; \qquad \sum_{k=1}^{\infty} \frac{k^k}{3^k k!}; \qquad \sum_{k=1}^{\infty} \left(\tan\left(\frac{1}{k}\right) - \frac{1}{k}\right); \qquad \sum_{k=1}^{\infty} k^2 \ln \frac{\sqrt{k^2+1}}{k}; \qquad \sum_{k=1}^{\infty} \frac{\ln k}{k};$$

$$\sum_{k=1}^{\infty} (-1)^k \frac{1}{\sqrt{k^2+1}}; \qquad \sum_{k=1}^{\infty} (-1)^k \frac{k^k}{3^k k!}; \qquad \sum_{k=1}^{\infty} (-1)^k \left(\tan\left(\frac{1}{k}\right) - \frac{1}{k}\right); \qquad \sum_{k=1}^{\infty} (-1)^k k^2 \ln \frac{\sqrt{k^2+1}}{k}; \qquad \sum_{k=1}^{\infty} (-1)^k \frac{\ln k}{k}.$$