AM1b, a.a. 2002-2003 - Esercizi 4

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2 aprile 2003

Determinare il carattere delle seguenti serie numeriche:

1. $\displaystyle\sum_{n=1}^{+\infty} \sqrt[n]{3}, \quad \sum_{n=1}^{+\infty} \frac{1}{2^n}, \quad \sum_{n=1}^{+\infty} \frac{2^n}{e^n}.$

2. $\displaystyle\sum_{n=1}^{+\infty} \frac{\ln n}{n^3}, \quad \sum_{n=1}^{+\infty} \frac{\ln n}{n^2}, \quad \sum_{n=1}^{+\infty} \frac{\ln n}{n}.$

3. $\displaystyle\sum_{n=1}^{+\infty} \frac{2n^2 - n + 1}{n^4 + 3}, \quad \sum_{n=1}^{+\infty} \frac{n^2 + 1}{n^3 - 2n}, \quad \sum_{n=1}^{+\infty} \frac{n^2 + 1}{n^3 + 5n}, \quad \sum_{n=1}^{+\infty} \frac{n - 1}{n^3 + 2}.$

4. $\displaystyle\sum_{n=1}^{+\infty} \frac{1}{\sqrt[3]{n^6 + 2n^3 + 1}}, \quad \sum_{n=1}^{+\infty}(\sqrt[3]{n^3 + 1} - n), \quad \sum_{n=1}^{+\infty}(\sqrt[3]{n^2 + 1} - \sqrt[3]{n^2}), \quad \sum_{n=1}^{+\infty}(\sqrt{n} - \sqrt{n^2 + 1}), \quad \sum_{n=1}^{+\infty} \frac{\sqrt{n + 1} - \sqrt{n}}{\sqrt{n}}.$

5. $\displaystyle\sum_{n=1}^{+\infty} \frac{n}{n!}, \quad \sum_{n=1}^{+\infty} \frac{2^n}{n!}, \quad \sum_{n=1}^{+\infty} \frac{n^n}{3^n n!}.$

6. $\displaystyle\sum_{n=1}^{+\infty} \frac{n^3}{n^n}, \quad \sum_{n=1}^{+\infty} \frac{3^n}{n^3}, \quad \sum_{n=1}^{+\infty} \left(\frac{n + 1}{5n}\right)^n, \quad \sum_{n=1}^{+\infty} \left(1 + \frac{1}{n}\right)^{n^2}.$