

**Tutorato 11 - ICA**  
**Mercoledì 15 Dicembre 2004**  
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a) Dire se convergono le serie seguenti

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| 1. $\sum_{n=1}^{\infty} \left(\frac{n+1}{5n}\right)^n$       | 2. $\sum_{n=1}^{\infty} \log\left(1 + \frac{1}{n^3}\right)$  |
| 3. $\sum_{n=1}^{\infty} \frac{1}{n} \sin \frac{1}{n+1}$      | 4. $\sum_{n=1}^{\infty} \frac{\log n}{n^3}$                  |
| 5. $\sum_{n=1}^{\infty} \frac{2n^2 - n + 1}{n^4 + 3}$        | 6. $\sum_{n=1}^{\infty} \frac{n^2 + 1}{n^3 - 2n}$            |
| 7. $\sum_{n=1}^{\infty} \frac{n!}{n^n}$                      | 8. $\sum_{n=1}^{\infty} \frac{1}{\sqrt[3]{n^6 + 2n^3 + 1}}$  |
| 9. $\sum_{n=0}^{\infty} \frac{n+1}{n!}$                      | 10. $\sum_{n=1}^{\infty} \left(\sqrt[3]{n^3 + 1} - n\right)$ |
| 11. $\sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^{n^2}$ | 12. $\sum_{n=1}^{\infty} \frac{n^3}{n^n}$                    |
| 13. $\sum_{n=1}^{\infty} \frac{n^n}{3^n n!}$                 | 14. $\sum_{n=1}^{\infty} \left(1 - \cos \frac{1}{n}\right)$  |

b) Dire per quali valori  $x > 0$  convergono le seguenti serie

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| 1. $\sum_{n=1}^{\infty} \left(\sqrt{n^x + 1} - \sqrt{n^x}\right)$ | 2. $\sum_{n=1}^{\infty} \frac{\log(1 + nx)}{nx^{n+1}}$ |
| 3. $\sum_{n=1}^{\infty} \frac{(2n)!x^n}{(n!)^2}$                  |  |