

# Esercizi di Analisi Matematica I

29 dicembre 2009

Calcolare i seguenti limiti:

1.  $\lim_{x \rightarrow +\infty} \left( \frac{2x^3 + 3^{-x}}{2x^3 + 2} \right)^{\log(x^6)}$
2.  $\lim_{x \rightarrow +\infty} \left( \frac{x^2 + 2}{x^2 - 1} \right)^{(2x+1)^2 - \log x}$
3.  $\lim_{x \rightarrow 0^+} \frac{(\sin(\frac{1}{x}) + \log x)(x\sqrt{x} + \sin x)}{\sqrt{x}}$
4.  $\lim_{x \rightarrow 0} \left( \frac{x+3}{x+2} \right)^{x-x^2}$
5.  $\lim_{x \rightarrow 0^+} \frac{\sin(2x)(1 + \log x)^2}{(x + \sqrt{x})^2 \log x}$
6.  $\lim_{x \rightarrow +\infty} \frac{e^{\frac{\sin x}{x}} + \log x}{x + 2^{-x} + x^2 \sin(\frac{1}{x})}$
7.  $\lim_{x \rightarrow 0^+} (1 + \sqrt{x})^{\frac{\log(1+\sqrt{x})}{2x}}$
8.  $\lim_{x \rightarrow 0^+} \frac{\sin(x^2) e^{2x}}{(x + \sin(x^2)) \sqrt{2x(x+1)}}$
9.  $\lim_{x \rightarrow 0^+} \sin(x^2 + x) \left( \log(x^2 + x) - \frac{1}{x\sqrt{x}} \right)$
10.  $\lim_{x \rightarrow +\infty} \left( \frac{x+2}{x+3} \right)^{\frac{x^2 + \sin x}{\sqrt{x^2+1}}}$
11.  $\lim_{x \rightarrow +\infty} \frac{e^{-x} + x \cos x - 2x^2 \log x}{x^2 \sin(1/x) + \log^6 x + x^2 \log(x^6)}$

Risultati dell'esercizio **1.** del 27/11.

- |              |              |         |          |           |
|--------------|--------------|---------|----------|-----------|
| 1. $+\infty$ | 2. $+\infty$ | 3. $-5$ | 4. $1/2$ | 5. $1/2$  |
| 6. $0$       | 7. $1$       | 8. $0$  | 9. $0$   | 10. $1/2$ |