Calcolare i seguenti limiti:

$$\lim_{x\to+\infty} \frac{x^2}{(\log x)^{1000} - x\sin(x^{500}) + x^2}$$

$$\lim_{n\to+\infty} \frac{n \sin n + 5}{n^2 + \sqrt{n}}$$

$$\lim_{x\to 1} \frac{x-1}{\sqrt{x}-1}$$

$$\lim_{x\to 3} \frac{x^2-2x-3}{x^2-6x+9}$$

$$\lim_{x\to 0} \frac{\cos(x^3)-1}{\sin(x^5)}$$

$$\lim_{t\to+\infty} \frac{\sqrt{t^6+1}\left(\cos\frac{2}{t}-1\right)}{t}$$

$$\lim_{x\to+\infty} \frac{\ln(1+2e^{x^3})}{x^3}$$

$$\lim_{x\to 0} \frac{2-2\cos x}{\operatorname{sen} x^2 - 3\sin x - x^2}$$

$$\lim_{x\to 0} \frac{\log_a(x+2)-\log_a 2}{x} \quad (a>0, a\neq 1)$$

$$\lim_{t\to+\infty} \frac{t^3 \log\left(1+\frac{3}{t^2}\right)}{\sqrt{t^2+1}}$$

$$\lim_{x\to 0} \frac{\log(1+\operatorname{arctg} x)^x}{e - e^{\cos^4 x}}$$

$$\lim_{x\to 0^+} \left(1+\sin(x^\alpha)\right)^{1/x} \qquad (\alpha>0)$$

$$\lim_{x\to +\infty} x^2\left(e^{\frac{1}{x}}-1\right)^{3/2}$$

$$\lim_{x\to +\infty} x^{1/3}\left(e^{1/x}-1\right)^{1/2}$$

$$\lim_{x\to +\infty} \sin\left(\frac{1}{x^{4/7}}\right)\left(\log\left(1+\frac{e}{x^{2/7}}\right)\right)^{-2}$$

$$\lim_{x\to +\infty} \sqrt{x}\sqrt{\left(1+\frac{1}{x}\right)^{1/4}-1}$$

$$\lim_{x\to 0} \frac{\left(1+x^{3/2}\right)^{2/3}-1}{e^{x^{3/2}}-1}$$

$$\lim_{x\to 0} \frac{\left|4^x-1-(\log 2)\sin x\right|}{x^3-|x|^2}$$

$$\lim_{n\to +\infty} \frac{n^2\log n}{2^{\sqrt{n}}}$$

$$\lim_{n\to +\infty} e^n\sin\left(\frac{1}{n^{100}}\right)$$

$$\lim_{n\to +\infty} \frac{n\left(1-\cos\frac{1}{n}\right)}{\sin\frac{1}{n}}$$

$$\lim_{n\to +\infty} \frac{n+1}{\sqrt{n}+2}\,\mathrm{tg}\,\frac{1}{\sqrt{n}}$$

$$\lim_{n\to +\infty} \mathrm{tg}\,\frac{\pi n^2}{2n^2-5n}$$

$$\lim_{n\to +\infty} (3n+2)\sin\left(\frac{\pi n-5}{n+7}\right)$$