LIMITI

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ULTERIORI ESERCIZI

Esercizio 2

$$\lim_{x\to+\infty}\frac{\left(x^2+x\right)\cdot\left(e^{-x}+1\right)}{x\log x}=$$

$$=\lim_{x\to+\infty}\frac{\cancel{x}\cdot(x+1)\cdot\left(e^{-x}+1\right)}{\cancel{x}\log x}=$$

$$=\lim_{x\to+\infty}\frac{x+1}{\log x}\cdot\lim_{x\to+\infty}\left(e^{-x}+1\right)=+\infty$$

Esercizio 3

$$\lim_{x\to 0^+} \frac{\left(e^x + x\right)\cdot x^3}{\log(1+x)} =$$

$$= \lim_{x\to 0^+}\left(e^x + x\right)\cdot \lim_{x\to 0^+} \frac{x^3}{\log(1+x)} = \lim_{x\to 0^+} \frac{3x^2}{\frac{1}{1+x}} = 0$$

Esercizio 4

$$\lim_{x\to+\infty}\frac{(x+1)\log^4 x}{(x-1)\cdot x^2}=$$

$$=\lim_{x\to+\infty}\frac{(x+1)}{(x-1)}\cdot\lim_{x\to+\infty}\frac{\log^4 x}{x^2}=\lim_{x\to+\infty}\frac{\log^4 x}{x^2}=0$$

Esercizio 5

$$\lim_{x\to+\infty}\frac{(x^2+1)\cdot(e^x+1)}{(x^2-1)\cdot x^5}=$$

$$=\lim_{x\to+\infty}\frac{(x^2+1)}{(x^2-1)}\cdot\lim_{x\to+\infty}\frac{(e^x+1)}{x^5}=\lim_{x\to+\infty}\frac{(e^x+1)}{x^5}=+\infty$$

Esercizio 6

$$\lim_{x\to+\infty} \frac{\log^2 x \cdot \left(1+\frac{1}{x}\right)}{x^2 \cdot \left(1-\frac{1}{x}\right)} =$$

$$\text{siccome: } \lim_{x\to+\infty} \frac{\log x}{x} = 0$$

$$\text{allora: } \lim_{x\to+\infty} \frac{\log^2 x \cdot \left(1+\frac{1}{x}\right)}{x^2 \cdot \left(1-\frac{1}{x}\right)} = 0$$

Esercizio 7

$$\lim_{x \to -\infty} \frac{e^{-x} \cdot \left(1 - \frac{1}{x}\right)}{x \cdot e^{-2x}} =$$

$$\text{siccome: } \lim_{x \to -\infty} e^{x} = 0$$

$$= \lim_{x \to -\infty} \frac{e^{-x} \cdot \left(1 - \frac{1}{x}\right)}{x \cdot e^{-2x}} = \lim_{x \to -\infty} \frac{e^{-x}}{x \cdot e^{-2x}} = \lim_{x \to -\infty} \frac{e^{x}}{x} = 0$$