Esercizio 1

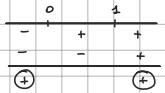
$n \cdot \ln(e^2 \cdot n) = \text{(H)} \left(\ln \sqrt{(n)^n}\right)$

$n\left(\ln(e^2) + \ln(n)\right) = \text{(H)} \left(\frac{n}{2}\ln(n)\right) \iff 2n + n\ln(n) = \text{(H)} \left(\frac{n}{2}\ln(n)\right)$

$$\lim_{n\to\infty} \frac{2n + n\ln(n)}{\frac{n}{2}\ln(n)} = \lim_{n\to\infty} \frac{2n}{\frac{n}{2}\ln(n)} + \frac{n\ln(n)}{\frac{n}{2}\ln(n)} = \lim_{n\to\infty} \frac{4}{\ln(n)} + 2 = 2$$

$$\frac{d}{dn}\left(\frac{4}{\ln(n)} + 2\right) = \frac{2n}{\ln(n)}$$

$$\frac{2n}{\ln(n)} > 0 \quad \left\| \begin{matrix} N>0 \\ b>0 \end{matrix} \right. \quad \left\| \begin{matrix} 2n>0 \\ \ln(n)>0 \end{matrix} \right. \quad \left\| \begin{matrix} n>0 \\ n>1 \end{matrix} \right.$$



$n < 0 \vee n > 1$

Quindi $C_2 = 2$ e $C_1 = \frac{22 + 2\ln(2)}{\ln(2)} \simeq 7{,}7$