ESERCIZIO 1: Sia

$$a_n = \ln\left((n^{2/5}+5)^{1/3} - (n^{2/5}-5)^{1/3}\right) + \frac{4}{15}\ln n$$

poiché

$$(n^{2/5}+5)^{1/3} - (n^{2/5}-5)^{1/3} = \frac{10}{(n^{2/5}+5)^{2/3} + (n^{2/5}+5)^{1/3}(n^{2/5}-5)^{1/3} + (n^{2/5}-5)^{2/3}}$$

$$= \frac{10}{n^{\frac{4}{15}}(3+o(1))}$$

si ottiene

$$a_n = \ln\frac{10}{3} - \frac{4}{15}\ln n - \ln(1+o(1)) + \frac{4}{15}\ln n$$

da cui

$$\lim_{n\to+\infty} a_n = \ln\frac{10}{3}$$