

Gossos d'esquadra: Problema -287 - A qui li interessa aproximar π ?

$$\sum_{k=0}^{n-1} \frac{n}{n^2+k^2} = \frac{1}{n} \sum_{k=0}^{n-1} \frac{1}{1+\left(\frac{k}{n}\right)^2}, \text{ como } f(x) = \frac{1}{1+x^2} \text{ es continua en } [0,1],$$

$$\text{tenemos que } \left[\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=0}^{n-1} \frac{1}{1+\left(\frac{k}{n}\right)^2} = \int_0^1 \frac{1}{1+x^2} dx = \arctg(x) \Big|_0^1 = \frac{\pi}{4} \right]$$