$y = \arctan x + x$ C.E $\mathbb{R}$

$\lim\limits_{x \to -\infty} f(x) = -\infty$

$m = \lim\limits_{x \to \infty} \left(\frac{\arctan x}{x} + 1 \right) = \frac{n}{\infty} + 1 = 0 + 1 = 1$

$\lim\limits_{x \to +\infty} f(x) = +\infty$

$q = \lim\limits_{x \to \infty} \arctan x = \begin{cases} -\infty & -\frac{\pi}{2} \\ +\infty & +\frac{\pi}{2} \end{cases}$

$x \to -\infty \quad y = x - \frac{\pi}{2}$

$x \to +\infty \quad y = x + \frac{\pi}{2}$

PARI o DISPARI

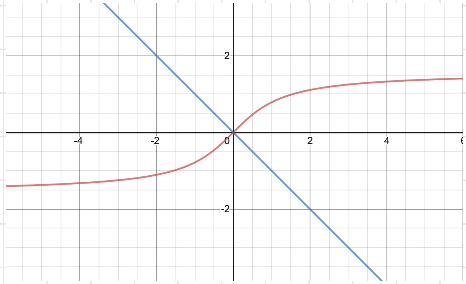
$f(-x) = \arctan(-x) - x \to$ non PARI

$f(-x) = -\arctan x - x \to$ DISPARI

INTERSEZIONI

$y = 0 \quad \arctan x = -x$

$P(0;0)$



SEGNO

*

$\underline{x^2+2}$

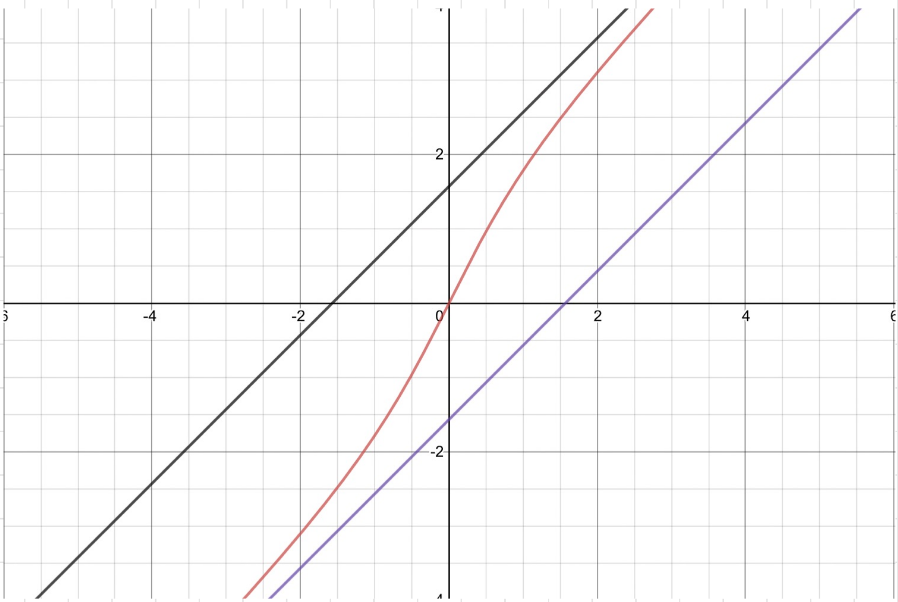
$y' = \frac{1}{x^2+1} + 1 \quad y' = 0 \to \emptyset \quad y' > 0$ in $\mathbb{R}$ sempre crescente

$y'' = -\frac{2x}{(x^2+1)^2} \quad y'' = 0 \quad x = 0 \quad P(0;0)$

$y'' > 0 \quad x < 0$

0

$\cap \quad \cup$



$y = \frac{\operatorname{sen} x}{x}$ C.E $x \neq 0$ PARI o DISPARI $f(-x) = \frac{\operatorname{sen}(-x)}{-x} = \frac{-\operatorname{sen} x}{-x}$ é PARI

LIMITI $\lim_{x \to 0^+} \frac{\operatorname{sen} x}{x} = 1$ -> Discontinuità di 3° specie -> $\lim_{x \to x_0^-} = \lim_{x \to x_0^+} = \ell$ $f(x_0) \neq \ell$

$\lim_{x \to +\infty} \frac{\operatorname{sen} x}{x} = \frac{-1 \leq n \leq 1}{\infty} = 0$ $y = 0$ é AS ORIZZONTALE

INTERSEZIONI

$y = 0$ $\frac{\operatorname{sen} x}{x} = 0$ $\operatorname{sen} x = 0$ -> $x = k\pi$ $k \neq 0$

SEGNO

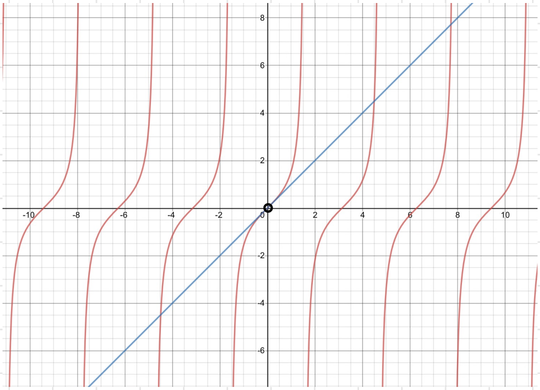
$y > 0$ $\frac{\operatorname{sen} x}{x}$ $(0; +\infty)$ $\operatorname{sen} x > 0$

DERIVATA

$y' = \frac{x \cos x - \operatorname{sen} x}{x^2}$ $y' = 0$ $x \cos x - \operatorname{sen} x = 0$

$x \cos x = \operatorname{sen} x$

$x = \tan x$ $\begin{cases} y = x \\ y = \tan x \end{cases}$



-> si intersecano INFINITE volte
↳ distanziati π -> periodo $= \pi$

-> $\frac{\operatorname{sen} x}{x}$ -> $\frac{[-1;1]}{x \to \infty}$ -> y DIMINUISCE -> 0