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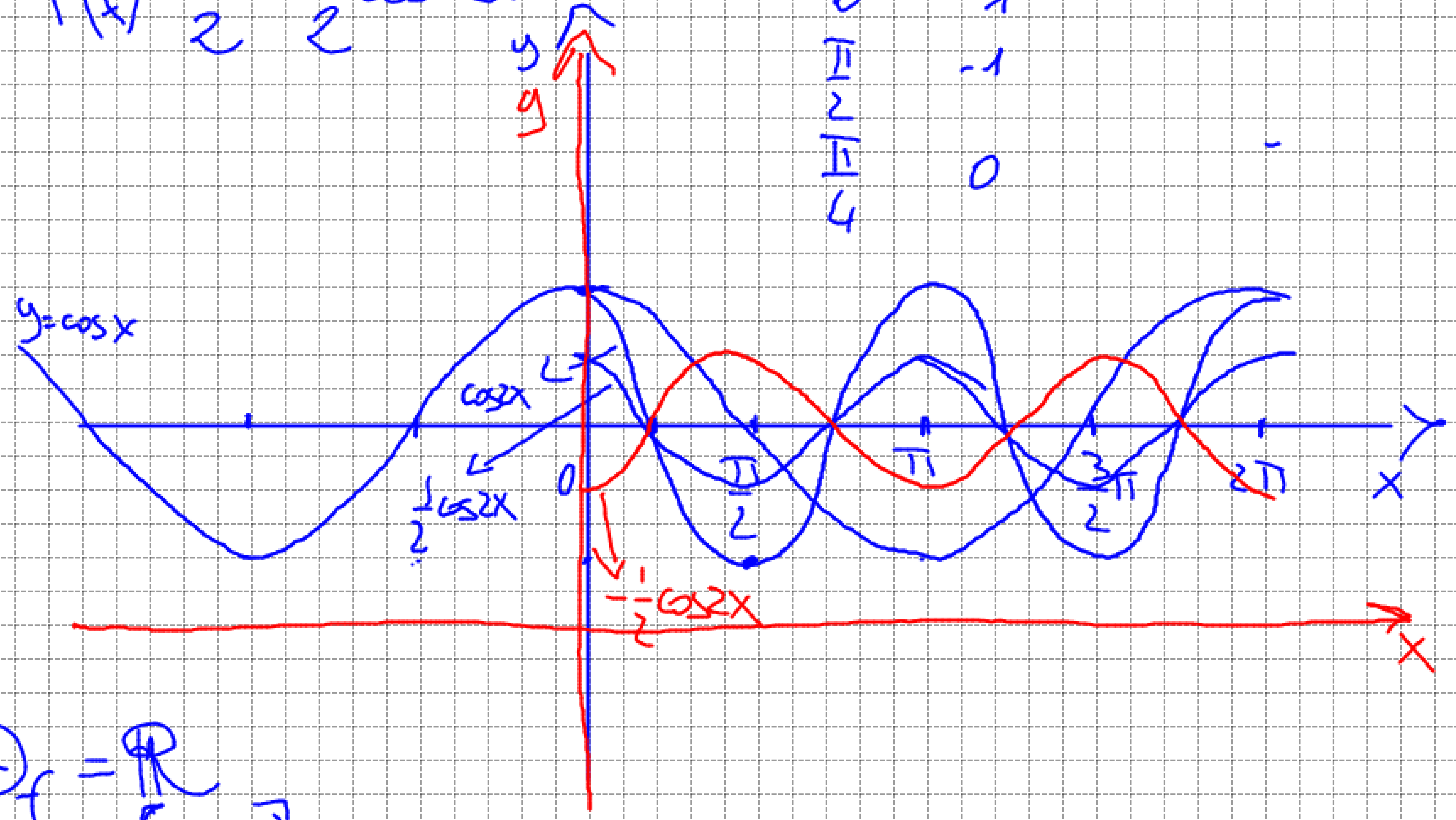
$f(x) = 1 + \underline{\operatorname{sen}^2 x}$

$\cos 2x = 1 - 2\operatorname{sen}^2 x$

$\operatorname{sen}^2 x = -\frac{1}{2}\cos 2x + \frac{1}{2}$

$f(x) = \frac{3}{2} - \frac{1}{2}\cos 2x$

x	y = cos2x
0	1
$\frac{\pi}{2}$	-1
$\frac{\pi}{4}$	0



$D_f = \mathbb{R}$

$C_f = [1, 2]$

$T = \pi$

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$f(x) = a\operatorname{sen} 2x + b\cos 2x + c$

$$\begin{cases} f(0) = 0 \\ f\left(\frac{\pi}{2}\right) = -2\sqrt{2} \\ f\left(\frac{\pi}{4}\right) = 0 \end{cases} \qquad \begin{cases} a\operatorname{sen} 0 + b\cos 0 + c = 0 \\ a\operatorname{sen}\pi + b\cos\pi + c = -2\sqrt{2} \\ a\operatorname{sen}\frac{\pi}{2} + b\cos\frac{\pi}{2} + c = 0 \end{cases}$$

$f(x) = 0$

$$\begin{cases} b = -c \quad \rightarrow b = \sqrt{2} \\ c = -\sqrt{2} \\ a = \sqrt{2} \end{cases} \qquad \begin{cases} 0 + b + c = 0 \\ 0 - b + c = -2\sqrt{2} \\ a + 0 + c = 0 \end{cases}$$

$\sqrt{2}\operatorname{sen} 2x + \sqrt{2}\cos 2x - \sqrt{2} = 0$

$\sqrt{2}\left(2\operatorname{sen}x\cos x\right) + \sqrt{2}\left(\cos^2 x - \operatorname{sen}^2 x\right) - \sqrt{2} = 0$

$2\sqrt{2}\operatorname{sen}x\cos x + \sqrt{2}\cos^2 x - \sqrt{2}\operatorname{sen}^2 x - \sqrt{2} = 0$

$2\sqrt{2}\operatorname{sen}x\cos x + \cancel{\sqrt{2}\cos^2 x} - \sqrt{2}\operatorname{sen}^2 x - \sqrt{2}\operatorname{sen}^2 x - \cancel{\sqrt{2}\cos^2 x} = 0$

$2\sqrt{2}\operatorname{sen}^2 x - 2\sqrt{2}\operatorname{sen}x\cos x = 0$

$2\sqrt{2}\operatorname{sen}x\left(\operatorname{sen}x - \cos x\right) = 0$

$2\sqrt{2}\operatorname{sen}x = 0$ (1)

$\operatorname{sen}x - \cos x = 0$ (2)

① $2\sqrt{2}\,\text{sen}\,x = 0 \longrightarrow \text{sen}\,x = 0$

S_1 $\boxed{x = k\pi \quad k \in \mathbb{N}}$

② $\text{sen}\,x - \cos x = 0$

$\cos x \neq 0$

$x \neq \frac{\pi}{2} + k\pi \quad k \in \mathbb{N}$

$\text{tg}\,x - 1 = 0$

$\text{tg}\,x = 1$ S_2 $\boxed{x = \frac{\pi}{4} + k\pi \quad k \in \mathbb{N}}$

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$$\begin{cases} x-y=\frac{\pi}{4} \\ \text{sen}\, x+\sqrt{2}\cos y=1 \end{cases} \qquad \begin{cases} x=y+\frac{\pi}{4} \\ \text{sen}\left(y+\frac{\pi}{4}\right)+\sqrt{2}\cos y=1 \end{cases}$$

$$\begin{cases} x=y+\frac{\pi}{4} \\ \text{sen}\, y\cos\frac{\pi}{4}+\cos y\,\text{sen}\frac{\pi}{4}+\sqrt{2}\cos y=1 \end{cases}$$

$$\begin{cases} x=y+\frac{\pi}{4} \\ \frac{\sqrt{2}}{2}\text{sen}\, y+\frac{\sqrt{2}}{2}\cos y+\sqrt{2}\cos y=1 \end{cases}$$

$$(*)\begin{cases} x=y+\frac{\pi}{4} \\ \frac{\sqrt{2}}{2}\text{sen}\, y+\frac{3\sqrt{2}}{2}\cos y=1 \end{cases}$$

$$\text{sen}\, y=\frac{2t}{1+t^2} \qquad \cos y=\frac{1-t^2}{1+t^2}$$

$$\begin{cases} x=y+\frac{\pi}{4} \\ \frac{\sqrt{2}}{2}\cdot\frac{2t}{1+t^2}+\frac{3\sqrt{2}}{2}\cdot\frac{1-t^2}{1+t^2}=1 \end{cases}$$

$$(**)\quad \frac{2\sqrt{2}t}{2(1+t^2)}+\frac{3\sqrt{2}-3\sqrt{2}t}{2(1+t^2)}-\frac{2+2t^2}{2(1+t^2)}=0$$

$$2\sqrt{2}t-3\sqrt{2}t+3\sqrt{2}-2-2t^2=0$$

$$-\sqrt{2}t+2+3\sqrt{2}-2t^2$$

$$\sqrt{2}t+2-3\sqrt{2}+2t^2=0$$

$$t_{1,2}=\frac{-\sqrt{2}\pm\sqrt{2}}{}$$

Rivedere a casa!