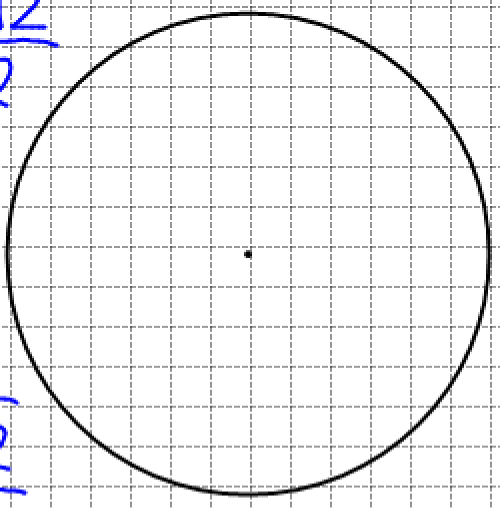
ES PAG 162 N 275

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

$$\begin{cases} y=\frac{\pi}{4}-2x \\ \cos x+\operatorname{sen}\frac{\pi}{4}\cos 2x-\cos\frac{\pi}{4}\operatorname{sen}2x=-\frac{\sqrt{2}}{2} \end{cases}$$



$$\begin{cases} y=\frac{\pi}{4}-2x \\ \cos x+\frac{\sqrt{2}}{2}\cos 2x-\frac{\sqrt{2}}{2}\operatorname{sen}2x=-\frac{\sqrt{2}}{2} \end{cases}$$

$$\begin{cases} y=\frac{\pi}{4}-2x \\ \cos x+\frac{\sqrt{2}}{2}(\cos^2 x-\operatorname{sen}^2 x)-\frac{\sqrt{2}}{2}(2\operatorname{sen}x\cos x)=-\frac{\sqrt{2}}{2} \end{cases}$$

$$\begin{cases} y=\frac{\pi}{4}-2x \\ 2\cos x+\sqrt{2}\cos^2 x-\sqrt{2}\operatorname{sen}^2 x-2\sqrt{2}\operatorname{sen}x\cos x+\sqrt{2}=0 \end{cases}$$

$$\begin{cases} y=\frac{\pi}{4}-2x \\ 2\cos x+\sqrt{2}\cos^2 x\cancel{-\sqrt{2}\operatorname{sen}^2 x}-2\sqrt{2}\operatorname{sen}x\cos x+\sqrt{2}\cos^2 x\cancel{+\sqrt{2}\operatorname{sen}^2 x}=0 \end{cases}$$

$$\begin{cases} y=\frac{\pi}{4}-2x \\ 2\sqrt{2}\cos^2 x-2\sqrt{2}\operatorname{sen}x\cos x+2\cos x=0 \end{cases}$$

$$\begin{cases} y=\frac{\pi}{4}-2x \\ 2\cos x\left(\sqrt{2}\cos x-\sqrt{2}\operatorname{sen}x+1\right)=0 \end{cases}$$

(1) $\begin{cases} y=\frac{\pi}{4}-2x \\ 2\cos x=0 \end{cases}$ (2) $\begin{cases} y=\frac{\pi}{4}-2x \\ \sqrt{2}\cos x-\sqrt{2}\operatorname{sen}x+1=0 \end{cases}$

① $\begin{cases} y=\frac{\pi}{4}-2x \\ \cos x=0 \end{cases}$ $\begin{cases} y=\frac{\pi}{4}-2x \\ x=\frac{\pi}{2}+k\pi \quad k\in\mathbb{N} \end{cases}$

S_1

$\begin{cases} y=\frac{\pi}{4}-\pi-2k\pi \quad k\in\mathbb{N} \\ x=\frac{\pi}{2}+k\pi \quad k\in\mathbb{N} \end{cases}$ $\begin{cases} \boxed{y=-\frac{3}{4}\pi-2k\pi \quad k\in\mathbb{N} \\ x=\frac{\pi}{2}+k\pi \quad k\in\mathbb{N}} \end{cases}$

② $\begin{cases} y=\frac{\pi}{4}-2x \\ \sqrt{2}\cos x-\sqrt{2}\,\mathrm{sen}\,x+1=0 \end{cases}$ ✱

✱ Risoluzione algebrica $\mathrm{tg}\frac{x}{2}=t \quad \cos\frac{x}{2}\neq 0 \Rightarrow$

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

se $x=\pi+2k\pi \quad k\in\mathbb{N} \Rightarrow \sqrt{2}\cos\pi-\sqrt{2}\,\mathrm{sen}\,\pi+1=0$

$-\sqrt{2}+0+1=0 \Rightarrow$ NO!

$\begin{cases} \cos x=\frac{1-t^2}{1+t^2} \\ \mathrm{sen}\,x=\frac{2t}{1+t^2} \end{cases}$ $\frac{\sqrt{2}(1-t^2)}{1+t^2}-\frac{\sqrt{2}(2t)}{1+t^2}+1=0$

$\sqrt{2}-\sqrt{2}t^2-2\sqrt{2}t+1+t^2=0$

$t^2(1-\sqrt{2})-2\sqrt{2}t+(1+\sqrt{2})=0$

$t_{1,2}=\frac{+\sqrt{2}\pm\sqrt{2-1+2}}{(1-\sqrt{2})}=\frac{\sqrt{2}\pm\sqrt{3}}{1-\sqrt{2}}=$

$t_1=\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}} \Rightarrow \mathrm{tg}\frac{x}{2}=\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}} \Rightarrow \frac{x}{2}=\mathrm{arctg}\left(\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}}\right)$

$x=2\,\mathrm{arctg}\frac{(\sqrt{2}+\sqrt{3})}{(1-\sqrt{2})}+k\pi \quad k\in\mathbb{N}$

$t_2=\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}} \Rightarrow \mathrm{tg}\frac{x}{2}=\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}} \Rightarrow \frac{x}{2}=\mathrm{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right) \quad k\in\mathbb{N}$

$x=2\,\mathrm{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right) \quad k\in\mathbb{N}$

① $\begin{cases} y=\frac{\pi}{4}-2x \\ x=2\,\mathrm{arctg}\left(\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}}\right) \quad k\in\mathbb{N} \end{cases}$ ② $\begin{cases} y=\frac{\pi}{4}-2x \\ x=2\,\mathrm{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right) \end{cases}$

$$(1)\begin{cases} y=\frac{\pi}{4}-2x \\ x=2\operatorname{arctg}\left(\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}}\right)+k\pi \quad k\in N \end{cases}$$

$$(2)\begin{cases} y=\frac{\pi}{4}-2x \\ x=2\operatorname{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right)+k\pi \quad k\in N \end{cases}$$

$$(1)\begin{cases} y=\frac{\pi}{4}-4\operatorname{arctg}\left(\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}}\right)-2k\pi \quad k\in N \\ x=2\operatorname{arctg}\left(\frac{\sqrt{2}+\sqrt{3}}{1-\sqrt{2}}\right)+k\pi \quad k\in N \end{cases}$$

$$(2)\begin{cases} y=\frac{\pi}{4}-4\operatorname{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right)-2k\pi \quad k\in N \\ x=2\operatorname{arctg}\left(\frac{\sqrt{2}-\sqrt{3}}{1-\sqrt{2}}\right)+k\pi \quad k\in N \end{cases}$$

$\operatorname{sen} x + \cos x = 1$

Risoluzione grafica

$$\begin{cases} \operatorname{sen} x = Y \\ \cos x = X \\ X^2 + Y^2 = 1 \end{cases} \qquad \begin{cases} Y + X = 1 \\ X^2 + Y^2 = 1 \end{cases}$$

$S_1: x = 0 + 2k\pi \quad k \in \mathbb{N}$

$S_2: x = \frac{\pi}{2} + 2k\pi$

$k \in \mathbb{N}$