N) $\dfrac{\sqrt{2}\,|\cos x| - 1}{\sin^2 x - 3\cos^2 x} \le 0$ D)

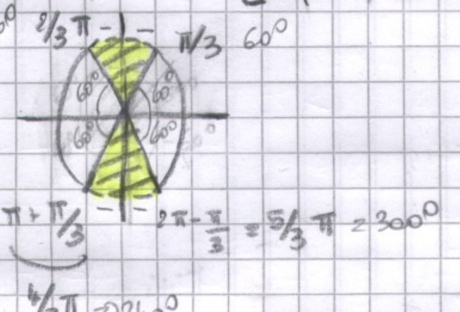
$CE \left\{ \sin^2 x - 3\cos^2 x \neq 0 \quad \sqrt{2} \text{ sempre } > 0 \ \forall x \in R \right\}$

D) $\sin^2 x - 3\cos^2 x \neq 0$

$1 - \cos^2 x - 3\cos^2 x \neq 0$

$1 - 4\cos^2 x \neq 0 \Rightarrow \cos^2 x \neq \dfrac{1}{4} \Rightarrow$

$\cos x \neq \pm \dfrac{1}{2} \left(\dfrac{\pi}{3} = 60^\circ \right)$

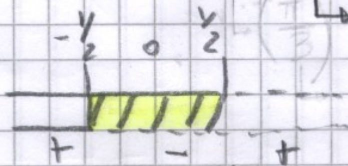


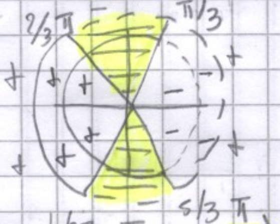
D) $\sin^2 x - 3\cos^2 x < 0$

$1 - \cos^2 x - 3\cos^2 x < 0$

$1 - 4\cos^2 x < 0$ Eq <0; $a<0$; $\Delta > 0$ — Intervalli esterni

$\cos x < \pm \dfrac{1}{2} \left(\pi/3 \right) \to (60^\circ)$

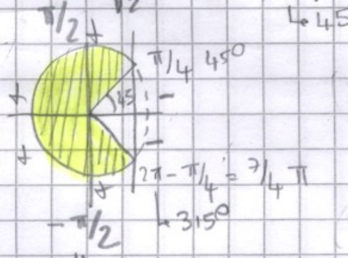




$\left(+/_- = - \right)$

N₁) $\sqrt{2}\cos x - 1 \le 0$

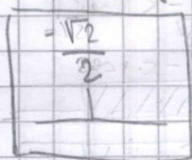
1) $\cos x \le \dfrac{1}{\sqrt{2}} \le \dfrac{\sqrt{2}}{2} \left(\pi/4 \right) \to 45^\circ$



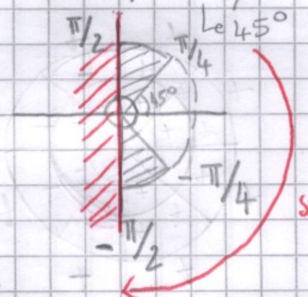
N₂) $\left\{ \begin{array}{l} -\sqrt{2}\cos x - 1 \le 0 \\ -\sqrt{2}\cos x \le +1 \Rightarrow \\ \cos x \le -\dfrac{1}{\sqrt{2}} \le -\dfrac{\sqrt{2}}{2} \left(-\pi/4 \right) \to 45^\circ \end{array} \right.$

N₃) $\left\{ \begin{array}{l} \sqrt{2}\cos x + 1 \ge 0 \Rightarrow \\ \cos x \ge -1/\sqrt{2} \ge -\dfrac{\sqrt{2}}{2} \end{array} \right.$

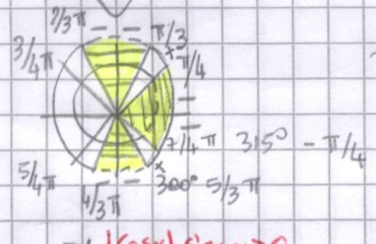
Soluzione impossibile!



Considerando il modulo di cos x ossia solo valori positivi del coseno $\Rightarrow$



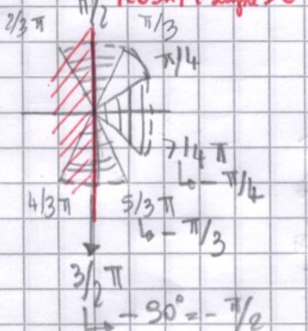
Senso orario di rotazione (−)



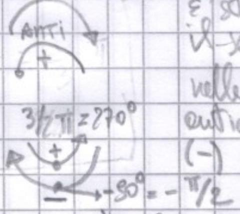
$\left\{ \boxed{\begin{array}{l} -\pi/4 < x < \pi/4 \ \vee \\ \pi/3 < x < \pi/2 \ \vee \end{array}} \right.$

$\pi/2 < x < 2/3\,\pi \Rightarrow$ soluzione che non considero come modulo del coseno

$\dfrac{4}{3}\pi < x < \dfrac{3}{2}\pi \Rightarrow$ soluzione che non considero come modulo del coseno



$\boxed{\left(3/2\,\pi \left(-\dfrac{\pi}{2} \right) < x < 5/3\,\pi \to \left(-\pi/3 \right) \right) \ \vee}$



È stato invertito il senso della rotazione nelle soluzioni da antiorario (+) ad orario (−) (*)

$R \Rightarrow \left\{ \begin{array}{l} 3/2\,\pi \le x \le 5/3\,\pi \to \text{analogo a: } \left(-\pi/2 \le x < -\pi/3 \right) \\ 7/4\,\pi \left(= -\pi/4 \right) \le x \le \pi/4 \ \vee \ \dfrac{\pi}{3} < x \le \pi/2 \\ + k\pi \ (*) \end{array} \right.$

(*) Il modulo del coseno fa sì che si estenda solo $1/2 \cdot 2\pi = \pi$ della circonferenza!