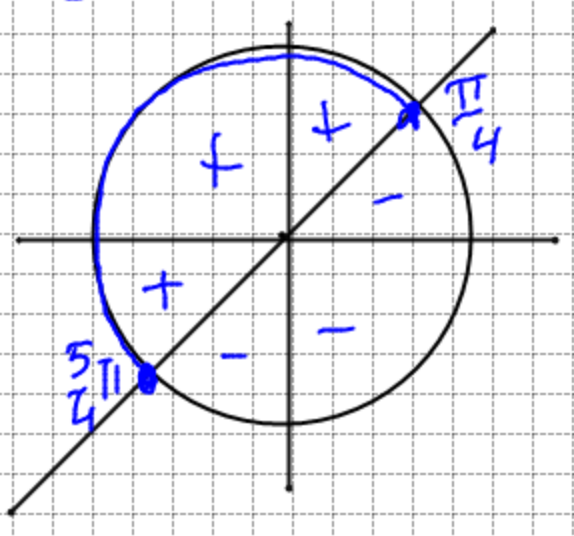
CORREZIONE COMPITO

$I=[0;2\pi]$ $\qquad \dfrac{\sin^2 x-\cos^2 x}{\sin 2x-\sin x}\leq 0$

N) $\sin^2 x-\cos^2 x\geq 0$ $\qquad (\sin x-\cos x)(\sin x+\cos x)\geq 0$

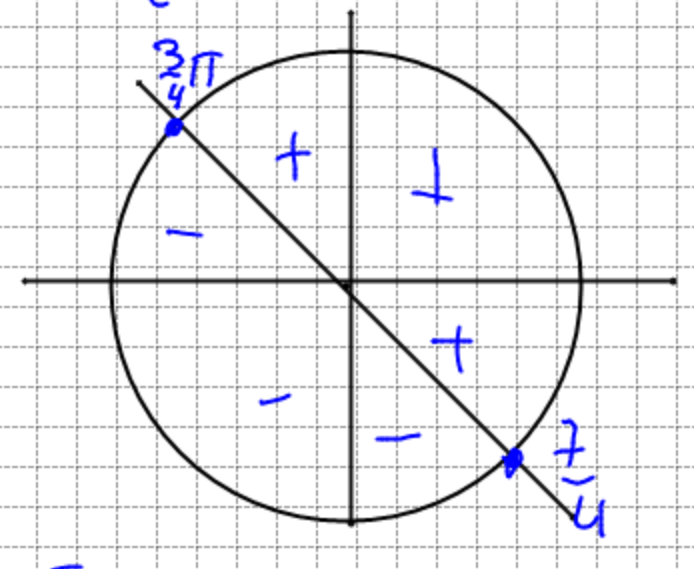
$\sin x-\cos x\geq 0$

$\begin{cases} y-x\geq 0 \\ x^2+y^2=1 \end{cases}$

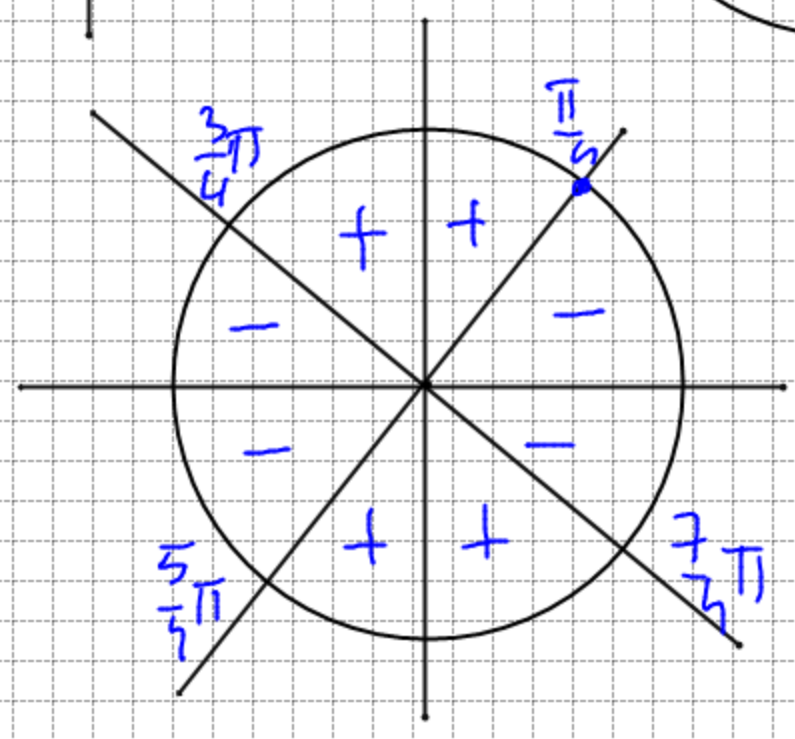


$\sin x+\cos x\geq 0$

$\begin{cases} x+y\geq 0 \\ x^2+y^2=1 \end{cases}$



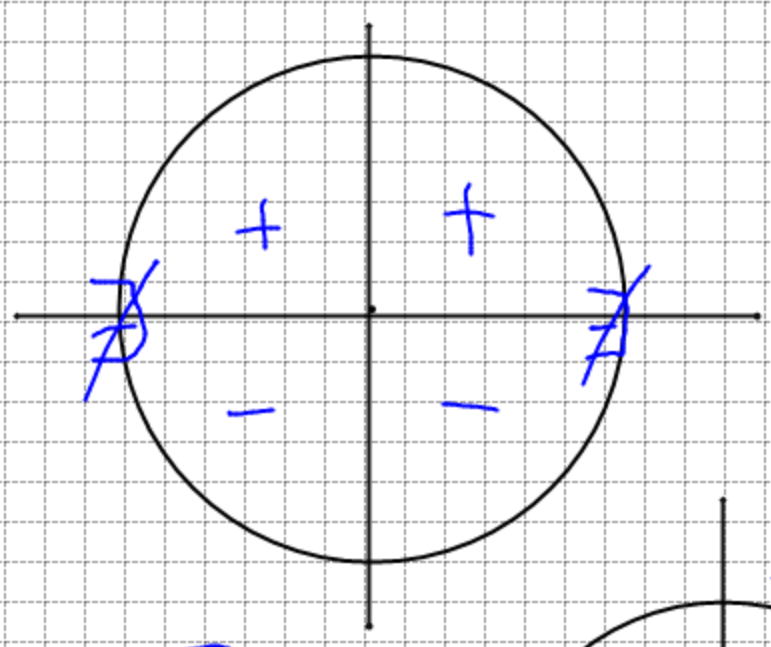
N



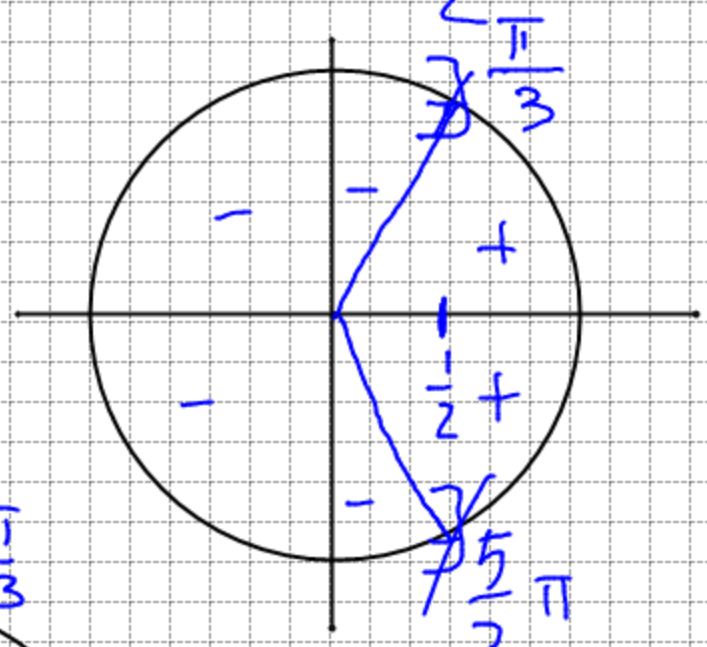
D) $\sin 2x-\sin x>0$ $\qquad 2\sin x\cos x-\sin x>0$

$\sin x(2\cos x-1)>0$

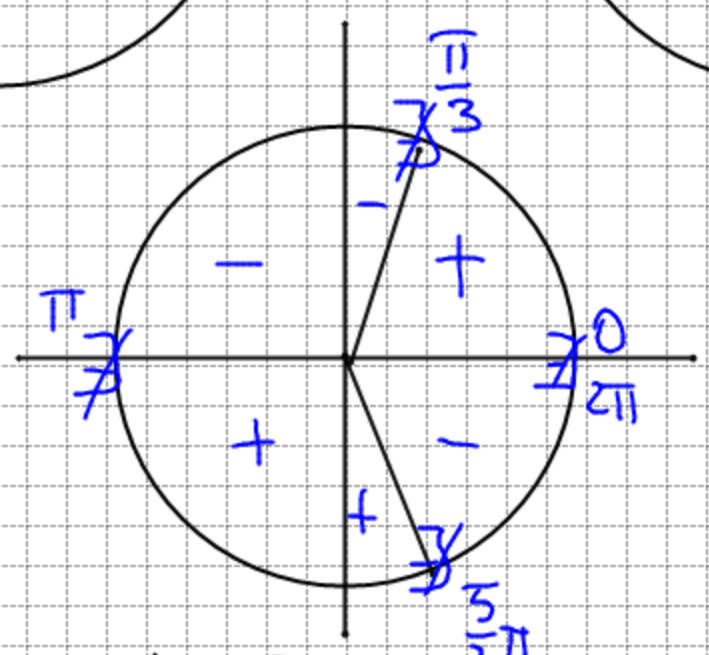
$\sin x>0$

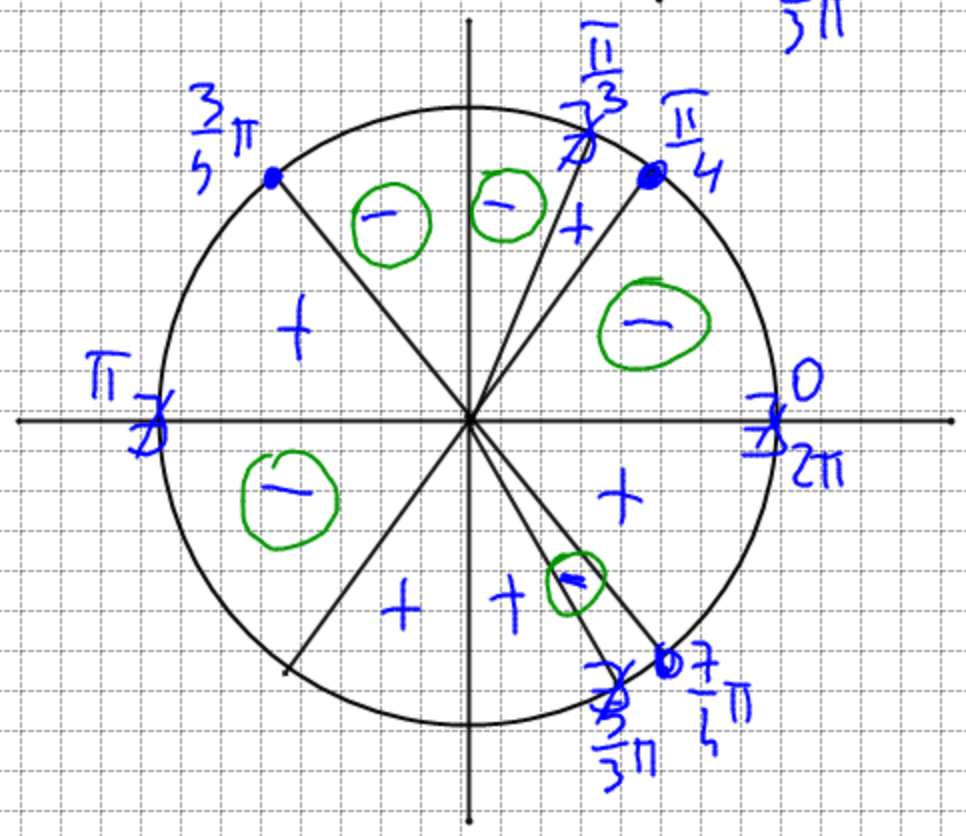


$\cos x>\frac{1}{2}$



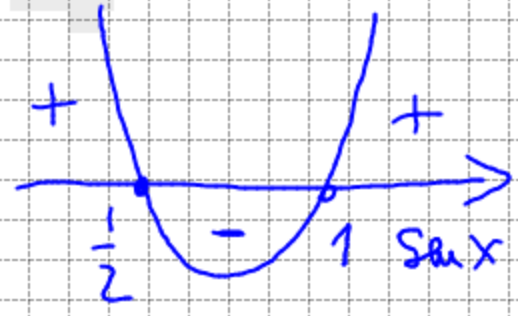
D



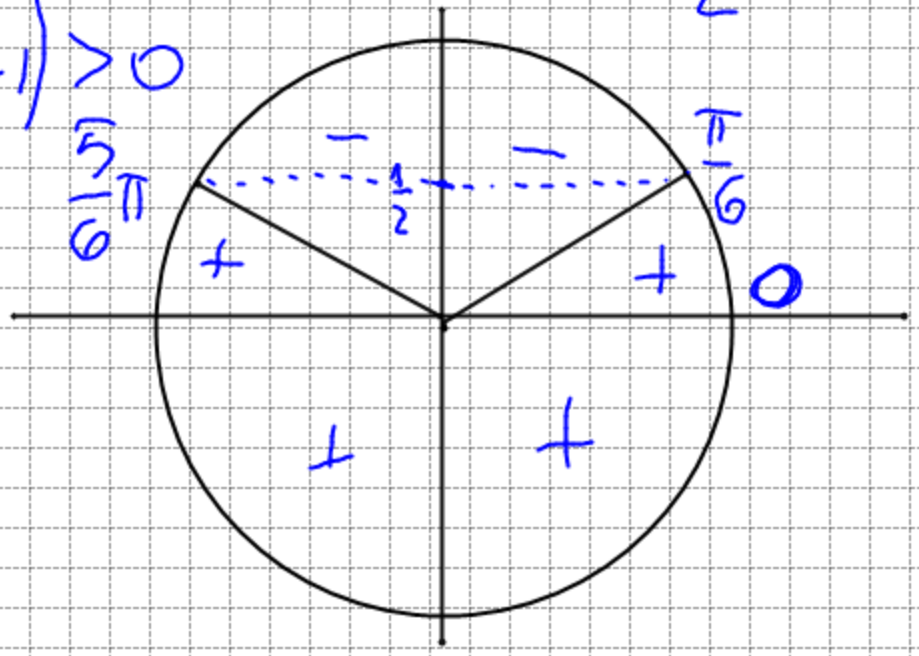


2) $2\operatorname{sen}^2 x - 3\operatorname{sen} x + 1 > 0$

$$\operatorname{sen} x = \frac{3 \pm \sqrt{9-8}}{4} = \frac{3 \pm 1}{4} \begin{cases} 1 \\ \frac{1}{2} \end{cases}$$



$$2\left(\operatorname{sen} x - \frac{1}{2}\right)\left(\operatorname{sen} x - 1\right) > 0$$



7) 26 persone

24 persone

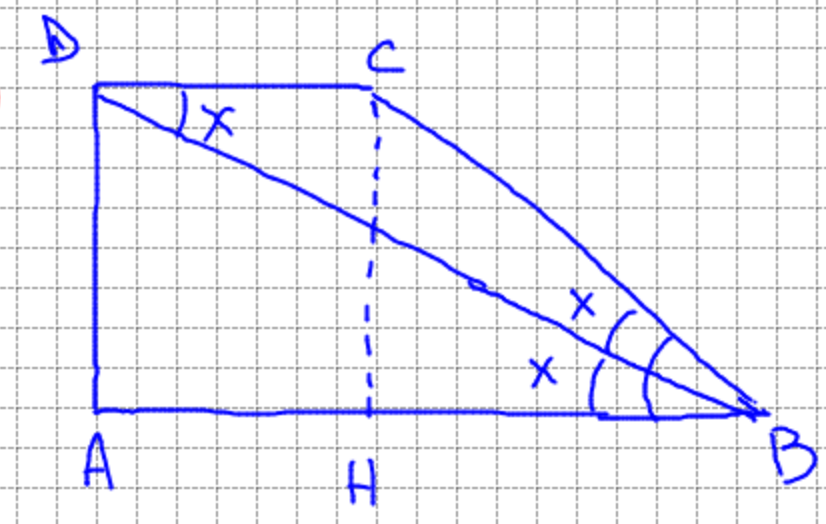
1° portiere $D_{24,4}$

2° portiere $2 \cdot D_{24,4}$

8) $\left(x+\frac{1}{x}\right)^6 = \sum_{k=0}^{6} \binom{6}{k} (x)^{6-k} \left(\frac{1}{x}\right)^k = \binom{6}{0} x^6 \left(\frac{1}{x}\right)^0 +$

$+ \binom{6}{1} x^5 \left(\frac{1}{x}\right) + \binom{6}{2} x^4 \left(\frac{1}{x}\right)^2 + \dots$

9)



$BD = 2\ell$

$A\hat{B}C = 2x$

$\overline{AB} = 2\ell \cos x$

$\overline{AD} = \overline{CH} = 2\ell \operatorname{sen} x$

$\overline{CB} = \frac{\overline{CH}}{\operatorname{sen} 2x} = \frac{2\ell \operatorname{sen} x}{2 \operatorname{sen} x \cos x} = \frac{\ell}{\cos x}$

$\overline{BC} = \overline{DC} = \frac{\ell}{\cos x}$

6) $y = \frac{\overline{AB} + \overline{AD}}{\overline{DC} + \overline{CB}}$

$0 < x < \frac{\pi}{2}$

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

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

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

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

$y = \frac{\sqrt{2}}{2} \operatorname{sen}\left(2x + \frac{\pi}{4}\right) + \frac{1}{2}$