

13/11/2018

651

N

D

$$\frac{3 \sin x - \sqrt{3} \cos x}{2 \cos x + 1} \leq 0$$

$N > 0$

STUDIARE IL SEGNO

$$3 \sin x - \sqrt{3} \cos x > 0$$

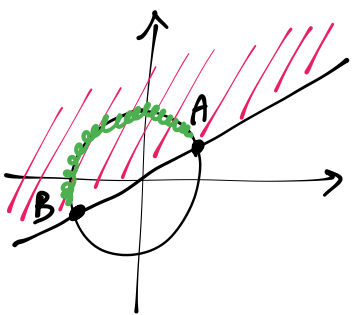
↓

$$\begin{cases} 3Y - \sqrt{3}X > 0 \Rightarrow Y > \frac{\sqrt{3}}{3}X \\ X^2 + Y^2 = 1 \end{cases}$$

SEMIPIANO SUPERIORE  
DI BORDO  $Y = \frac{\sqrt{3}}{3}X$

MOMENTANEAMENTE

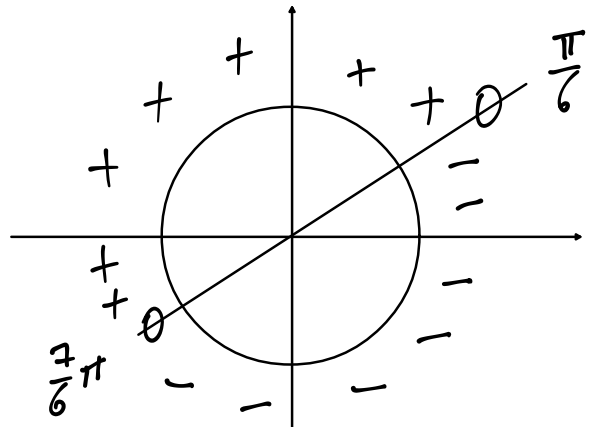
$$\begin{cases} 3Y - \sqrt{3}X = 0 \\ X^2 + Y^2 = 1 \end{cases} \Rightarrow \begin{cases} Y = \frac{\sqrt{3}}{3}X \\ X^2 + \frac{1}{3}X^2 = 1 \end{cases} \Rightarrow \begin{cases} Y = \frac{\sqrt{3}}{3}X \\ 4X^2 = 3 \end{cases} \Rightarrow \begin{cases} Y = \pm \frac{1}{2} \\ X = \pm \frac{\sqrt{3}}{2} \end{cases}$$



$A(\frac{\sqrt{3}}{2}, \frac{1}{2})$   
 $B(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$

$$\begin{aligned} N > 0 &\Leftrightarrow \frac{\pi}{6} + 2k\pi < x < \frac{7\pi}{6} + 2k\pi \\ N = 0 &\Leftrightarrow x = \frac{\pi}{6} + 2k\pi \vee x = \frac{7\pi}{6} + 2k\pi \end{aligned}$$

$$N < 0 \Leftrightarrow 2k\pi \leq x < \frac{\pi}{6} + 2k\pi$$

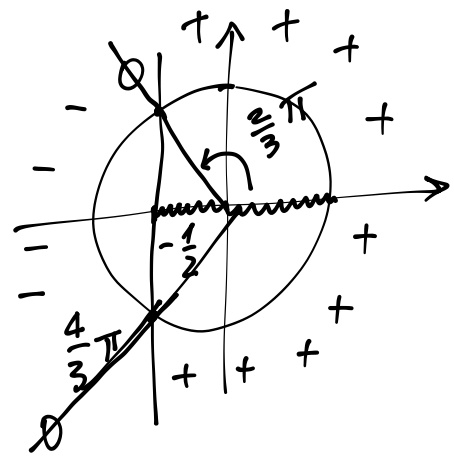


$$\frac{7\pi}{6} + 2k\pi < x \leq 2\pi + 2k\pi$$

$$D) 2 \cos x + 1 > 0$$

$$D > 0$$

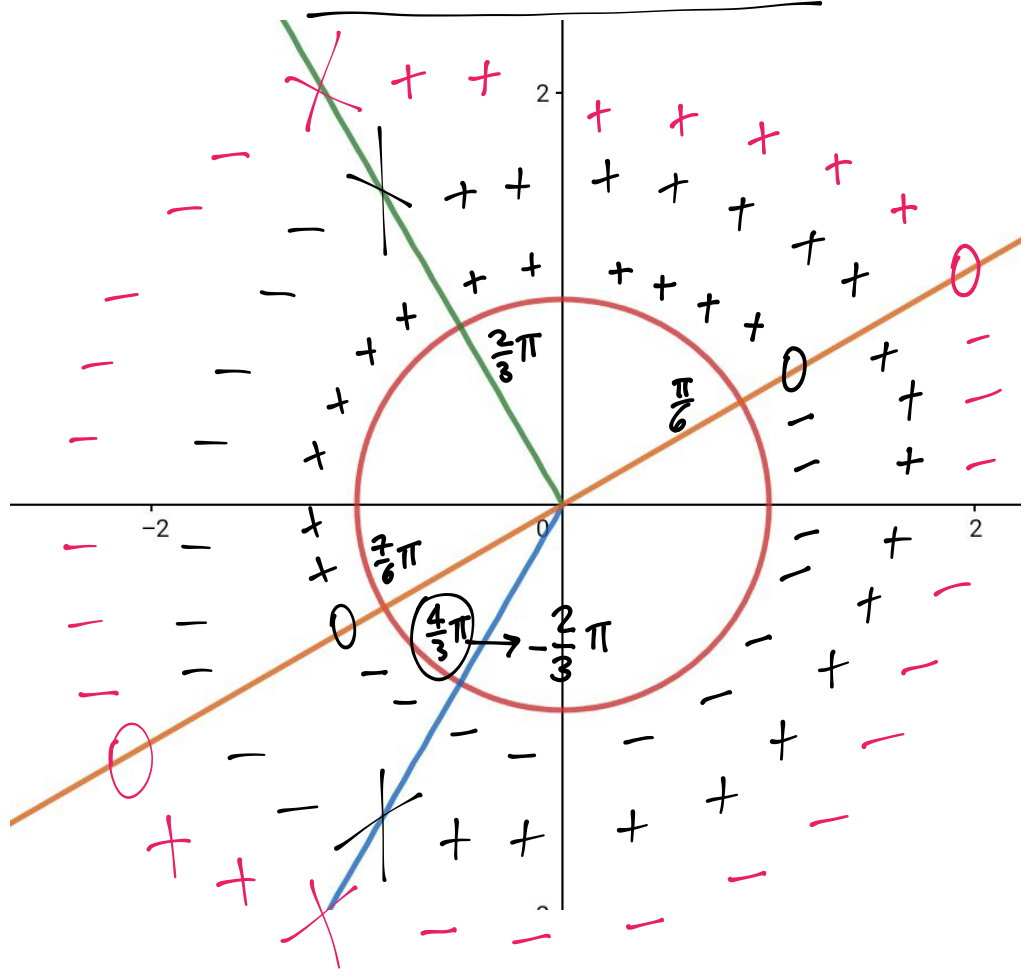
$$\cos x > -\frac{1}{2}$$



$$D > 0 \iff 2k\pi \leq x < \frac{2}{3}\pi + 2k\pi \quad \vee$$

$$\frac{4}{3}\pi + 2k\pi < x \leq 2\pi + 2k\pi$$

### SCHEMA FINALE



NUMERATORE → INTERNO  
DENOMIN. → ESTERNO

$$\frac{3 \sin x - \sqrt{3} \cos x}{2 \cos x + 1} \leq 0$$

$$-\frac{2}{3}\pi + 2k\pi < x \leq \frac{\pi}{6} + 2k\pi \quad \vee \quad \frac{2}{3}\pi + 2k\pi < x \leq \frac{7}{6}\pi + 2k\pi$$