

DISEQUAZIONI GONIOMETRICHE

ELEMENTARI

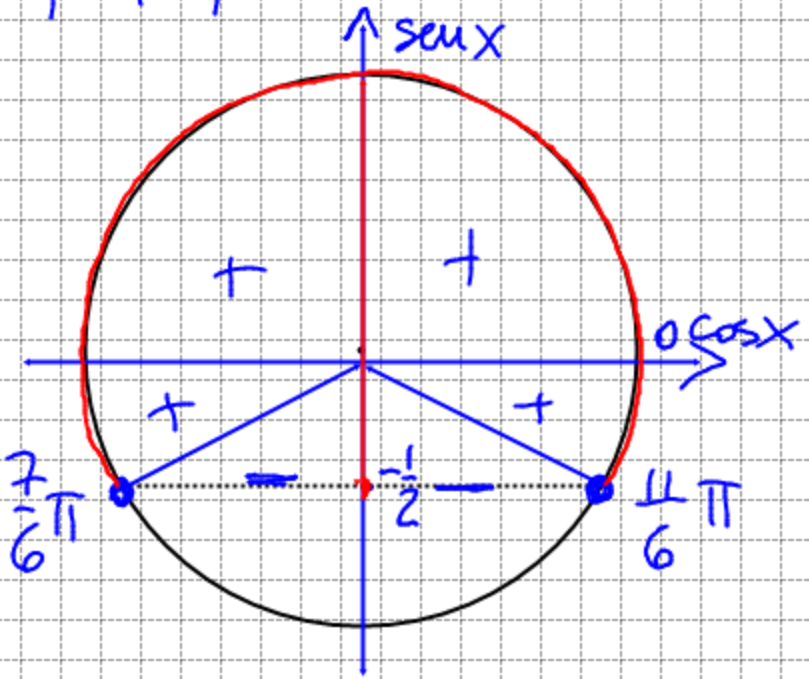
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- $\text{sen } x > m$ ($\text{sen } x \geq m$) oppure $\text{sen } x < m$ ($\text{sen } x \leq m$)
- $\text{cos } x > m$ ($\text{cos } x \geq m$) " $\text{cos } x < m$ ($\text{cos } x \leq m$)
- $\text{Tg } x > t$ ($\text{Tg } x \geq t$) " $\text{Tg } x < t$ ($\text{Tg } x \leq t$)
- $\text{ctg } x > s$ ($\text{ctg } x \geq s$) " $\text{ctg } x < s$ ($\text{ctg } x \leq s$)

$m, m, t, s \in \mathbb{R}$

1) $\text{sen } x \geq -\frac{1}{2}$

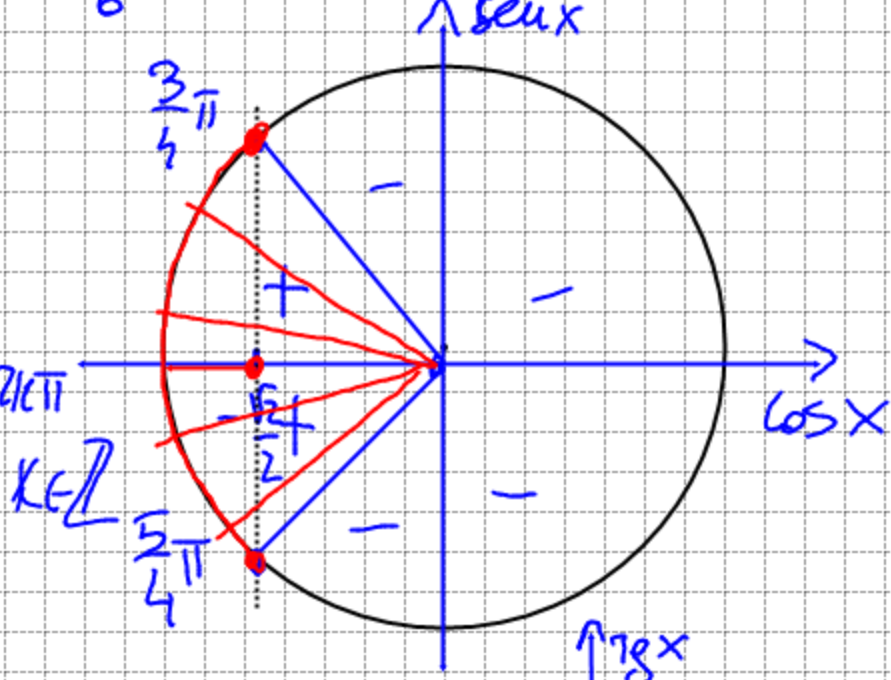
S: $0 + 2k\pi \leq x \leq \frac{7}{6}\pi + 2k\pi$
 U
 $\frac{11}{6}\pi + 2k\pi \leq x \leq 2\pi + 2k\pi$ $k \in \mathbb{Z}$



S: $-\frac{\pi}{6} + 2k\pi \leq x \leq \frac{7}{6}\pi + 2k\pi$ $k \in \mathbb{Z}$

2) $\text{cos } x \leq -\frac{\sqrt{2}}{2}$

S: $\frac{3\pi}{4} + 2k\pi \leq x \leq \frac{5\pi}{4} + 2k\pi$ $k \in \mathbb{Z}$

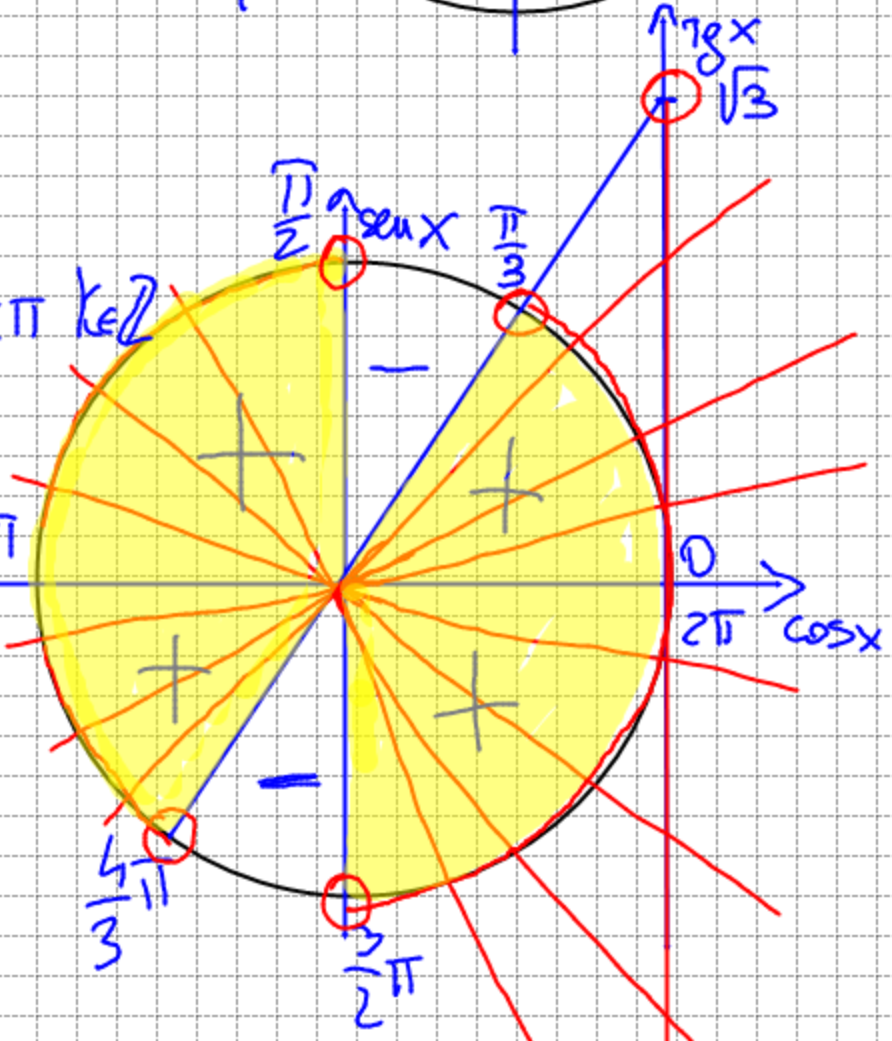


3) $\text{Tg } x < \sqrt{3}$

S: $-\frac{\pi}{2} + k\pi < x < \frac{\pi}{3} + k\pi$ $k \in \mathbb{Z}$

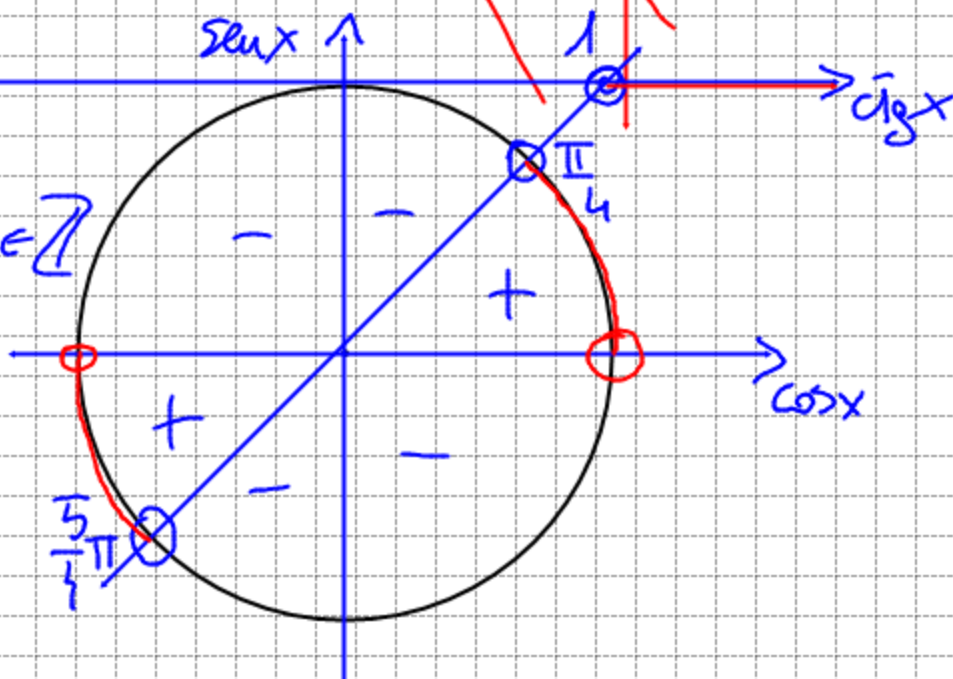
oppure

S: $0 + k\pi \leq x < \frac{\pi}{3} + k\pi$ U π
 U $\frac{\pi}{2} + k\pi < x < \pi + k\pi$
 con $k \in \mathbb{Z}$



4) $\text{ctg } x > 1$

S: $0 + k\pi < x < \frac{\pi}{4} + k\pi$ $k \in \mathbb{Z}$



DISEQUAZIONI RICONDUCCIBILI ALLE ELEMENTARI

1) $4\cos^2 x + 2(1-\sqrt{3})\cos x - \sqrt{3} > 0$

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$$\cos x = \frac{\sqrt{3}-1 \pm \sqrt{3+1-2\sqrt{3}+4\sqrt{3}}}{4} = \frac{\sqrt{3}-1 \pm \sqrt{(\sqrt{3}+1)^2}}{4} =$$

$$= \frac{\sqrt{3}-1 \pm (\sqrt{3}+1)}{4} \begin{cases} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{cases}$$

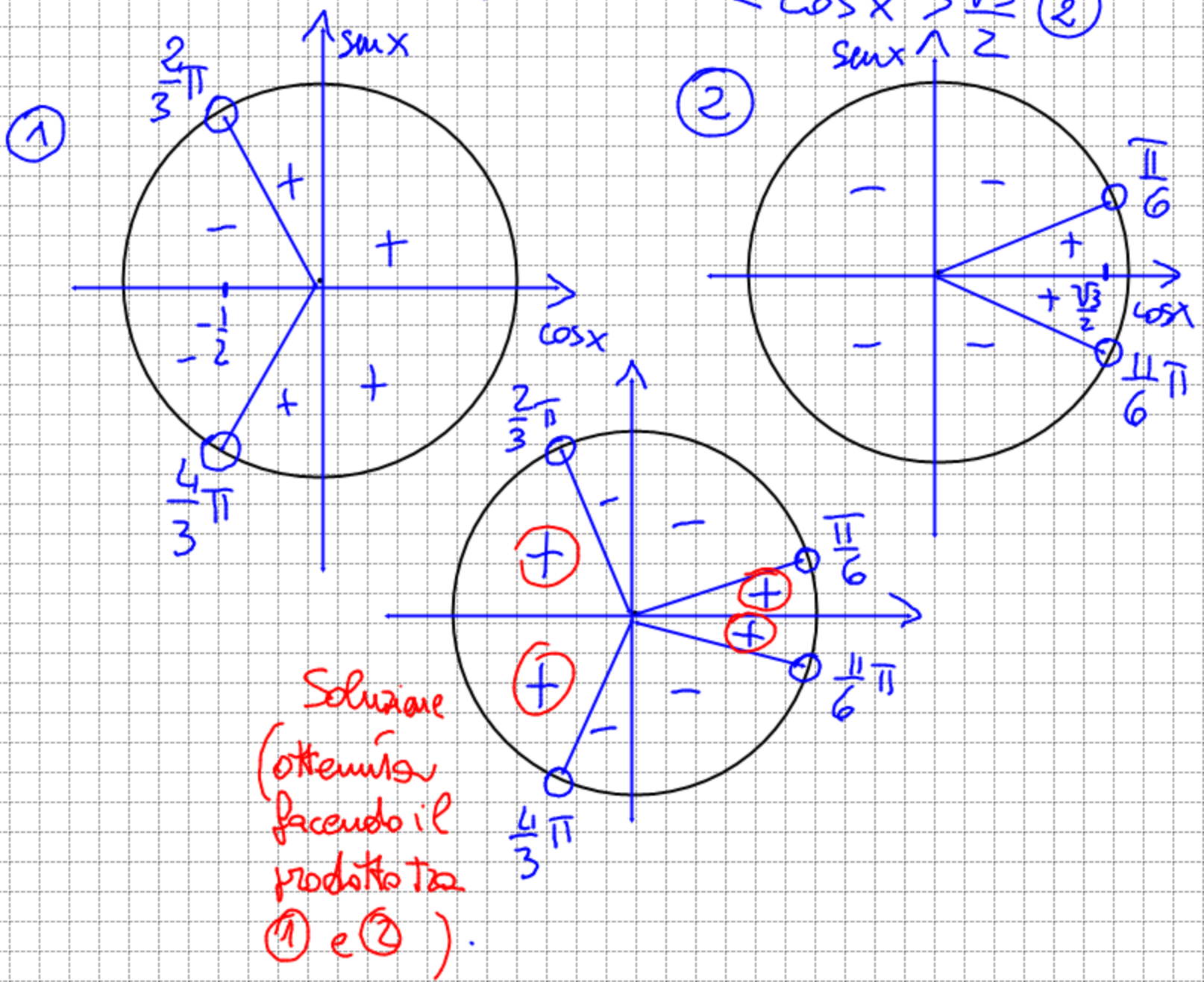
$$\cos x = -\frac{1}{2}$$

$$\cos x = \frac{\sqrt{3}}{2}$$

$(\cos x + \frac{1}{2})(\cos x - \frac{\sqrt{3}}{2}) > 0$

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

$\cos x > \frac{\sqrt{3}}{2}$ (2)



S: $0 + 2k\pi \leq x < \frac{\pi}{6} + 2k\pi \cup \frac{2}{3}\pi + 2k\pi < x < \frac{4}{3}\pi + 2k\pi \cup$
 $\cup \frac{11}{6}\pi + 2k\pi < x \leq 2\pi + 2k\pi$ con $k \in \mathbb{Z}$

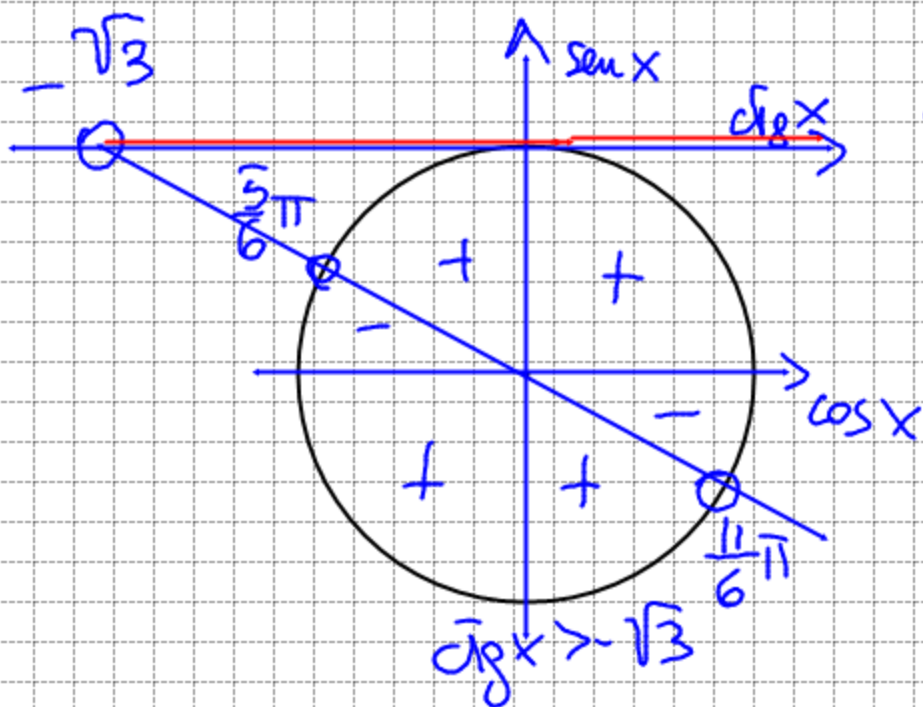
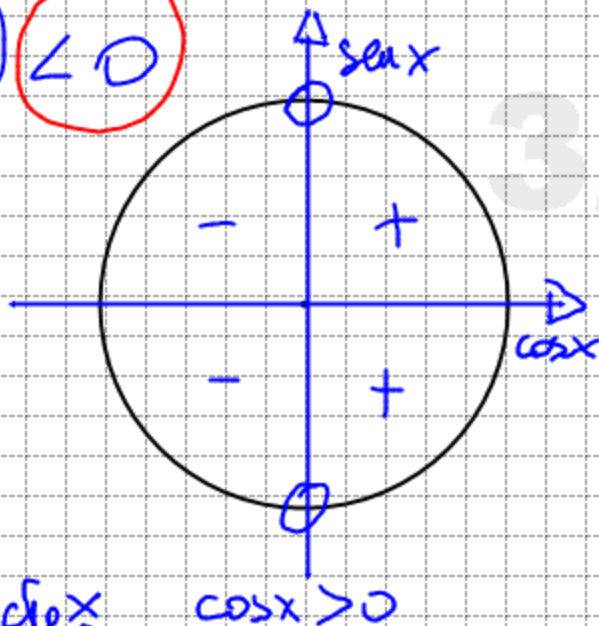
oppure

$-\frac{\pi}{6} + 2k\pi < x < \frac{\pi}{6} + 2k\pi \cup \frac{2}{3}\pi + 2k\pi < x < \frac{4}{3}\pi + 2k\pi$
 con $k \in \mathbb{Z}$.

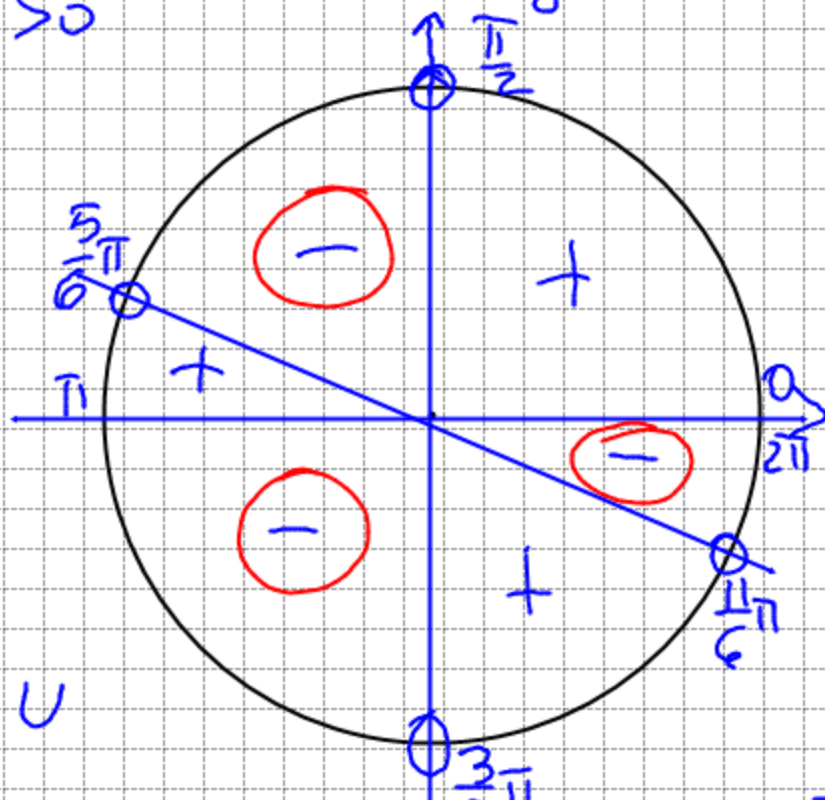
$$2) \cos x (\operatorname{ctg} x + \sqrt{3}) < 0$$

$$\cos x > 0$$

$$\operatorname{ctg} x + \sqrt{3} > 0$$



$$\cos x (\operatorname{ctg} x + \sqrt{3}) < 0$$



$$S : \frac{\pi}{2} + 2k\pi < x < \frac{5\pi}{6} + 2k\pi \cup$$

$$\cup \pi + 2k\pi < x < \frac{3\pi}{2} + 2k\pi \cup \frac{11\pi}{6} + 2k\pi < x < \frac{7\pi}{2} + 2k\pi \quad k \in \mathbb{Z}$$