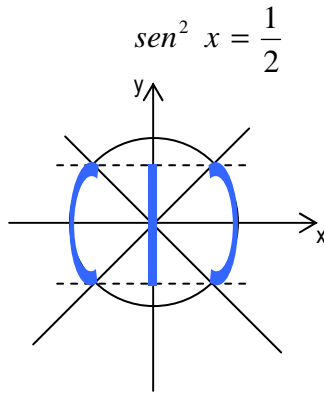


1.  $2 \operatorname{sen}^2 x - 1 \leq 0$

$2 \operatorname{sen}^2 x - 1 = 0$

$-\frac{\sqrt{2}}{2} \leq \operatorname{sen} x \leq \frac{\sqrt{2}}{2}$



$\operatorname{sen} x = \pm \frac{\sqrt{2}}{2}$

$-\frac{\pi}{4} + k \pi \leq x \leq \frac{\pi}{4} + k \pi$

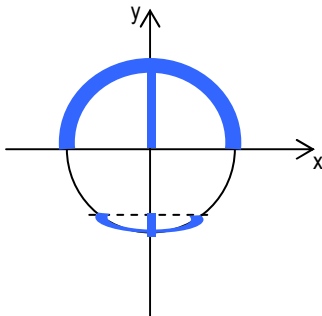
2.  $2 \operatorname{sen}^2 x + \sqrt{3} \operatorname{sen} x \geq 0$

$2 \operatorname{sen}^2 x + \sqrt{3} \operatorname{sen} x = 0$

$\operatorname{sen} x = 0 \quad \operatorname{sen} x = -\frac{\sqrt{3}}{2}$

$\operatorname{sen} x (2 \operatorname{sen} x + \sqrt{3}) = 0$

$\operatorname{sen} x \leq -\frac{\sqrt{3}}{2} \vee \operatorname{sen} x \geq 0$



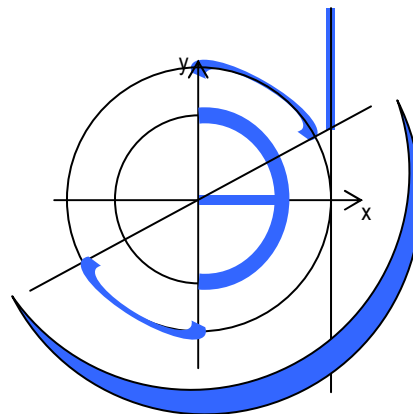
$2k\pi \leq x \leq \pi + 2k\pi \vee \frac{4}{3}\pi + 2k\pi \leq x \leq \frac{5}{3}\pi + 2k\pi$

3.  $3 \operatorname{sen} x - \sqrt{3} \cos x \leq 0$

$\cos x (3 \operatorname{tg} x - \sqrt{3}) \leq 0$

$\cos x \geq 0$

$\operatorname{tg} x \geq \frac{\sqrt{3}}{3}$



$-\frac{5}{6}\pi + 2k\pi \leq x \leq \frac{\pi}{6} + 2k\pi$

4.  $\text{sen } x + \cos x + 1 \leq 0$

$\text{sen } x + \cos x + 1 = 0$

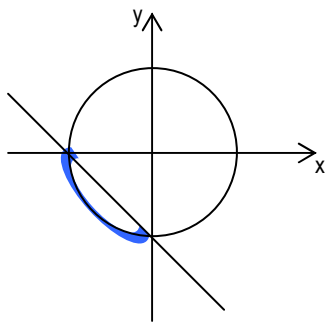
$$\begin{cases} X = -Y - 1 \\ Y^2 + 2Y + 1 + Y^2 = 1 \end{cases}$$

$$\begin{cases} Y + X + 1 = 0 \\ X^2 + Y^2 = 1 \end{cases}$$

$$\begin{cases} X = -Y - 1 \\ 2Y^2 + 2Y = 0 \end{cases}$$

$$\begin{cases} X = -1 \\ Y = 0 \end{cases}$$

$$\begin{cases} X = 0 \\ Y = -1 \end{cases}$$



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

5.  $\sqrt{3} \text{sen } x - \cos x - 1 \geq 0$

$\sqrt{3} \text{sen } x - \cos x - 1 = 0$

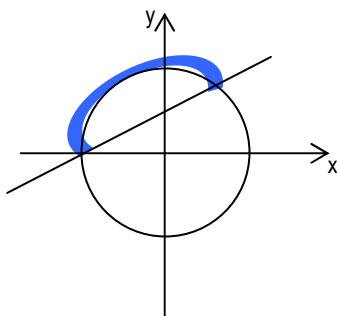
$$\begin{cases} X = Y\sqrt{3} - 1 \\ 3Y^2 - 2\sqrt{3}Y + 1 + Y^2 = 1 \end{cases}$$

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

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

$$\begin{cases} X = -1 \\ Y = 0 \end{cases}$$

$$\begin{cases} X = \frac{1}{2} \\ Y = \frac{\sqrt{3}}{2} \end{cases}$$



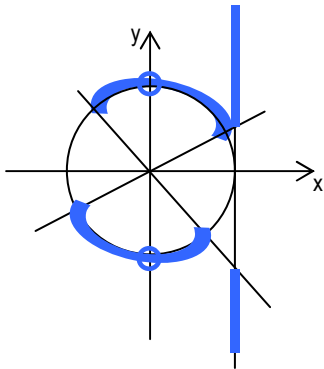
$$\frac{\pi}{3} + 2k\pi \leq x \leq \pi + 2k\pi$$

6.  $3 \operatorname{tg}^2 x - (\sqrt{3} - 3) \operatorname{tg} x - \sqrt{3} \geq 0$

$3 \operatorname{tg}^2 x - (\sqrt{3} - 3) \operatorname{tg} x - \sqrt{3} = 0$

$$\operatorname{tg} x = \frac{\sqrt{3} - 3 \pm \sqrt{3 + 9 - 6\sqrt{3} + 12\sqrt{3}}}{6} = \frac{\sqrt{3} - 3 \pm (\sqrt{3} + 3)}{6} = \begin{cases} \frac{\sqrt{3}}{3} \\ -1 \end{cases}$$

$$\operatorname{tg} x \leq -1 \vee \operatorname{tg} x \geq \frac{\sqrt{3}}{3}$$



$$\frac{\pi}{6} + k\pi \leq x \leq \frac{3}{4}\pi + k\pi \wedge x \neq \frac{\pi}{2} + k\pi$$

7.  $\frac{\sqrt{3} \operatorname{sen} x - \cos x}{1 - \operatorname{sen}^2 x} \geq 0$

$$\frac{\sqrt{3} \operatorname{sen} x - \cos x}{\cos^2 x} \geq 0$$

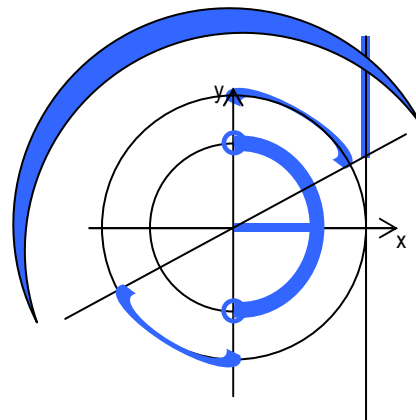
c.a.:  $\cos x \neq 0$

$\sqrt{3} \operatorname{sen} x - \cos x \geq 0$

$\cos x (\sqrt{3} \operatorname{tg} x - 1) \geq 0$

$\cos x > 0$

$\operatorname{tg} x \geq \frac{\sqrt{3}}{3}$



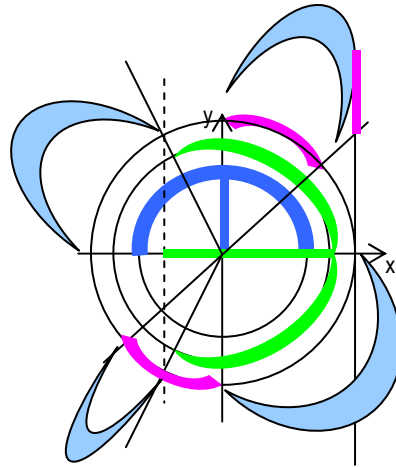
$$\frac{\pi}{6} + 2k\pi \leq x \leq \frac{7}{6}\pi + 2k\pi \wedge x \neq \frac{\pi}{2} + 2k\pi$$

8.  $\text{sen } x (2 \cos x + 1) (\text{tg } x - 1) \geq 0$

$\text{sen } x \geq 0$

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

$\text{tg } x \geq 1$



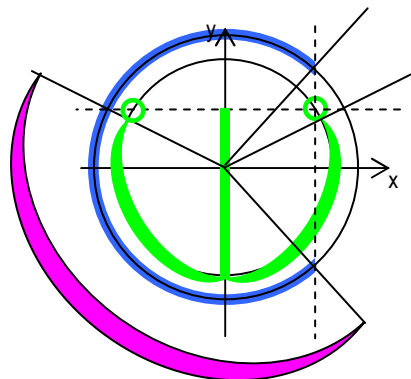
$$\frac{\pi}{4} + 2k\pi \leq x < \frac{\pi}{2} + 2k\pi \vee \frac{2}{3}\pi + 2k\pi \leq x \leq \pi + 2k\pi \vee$$

$$\vee \frac{5}{4}\pi + 2k\pi \leq x \leq \frac{4}{3}\pi + 2k\pi \vee \frac{3}{2}\pi + 2k\pi < x \leq 2\pi + 2k\pi$$

9.  $\begin{cases} 1 - 2 \text{sen } x > 0 \\ 2 \cos x - \sqrt{2} \leq 0 \end{cases}$

$\text{sen } x < \frac{1}{2}$

$\cos x \leq \frac{\sqrt{2}}{2}$



$$\frac{5}{6}\pi + 2k\pi < x \leq \frac{7}{4}\pi + 2k\pi$$