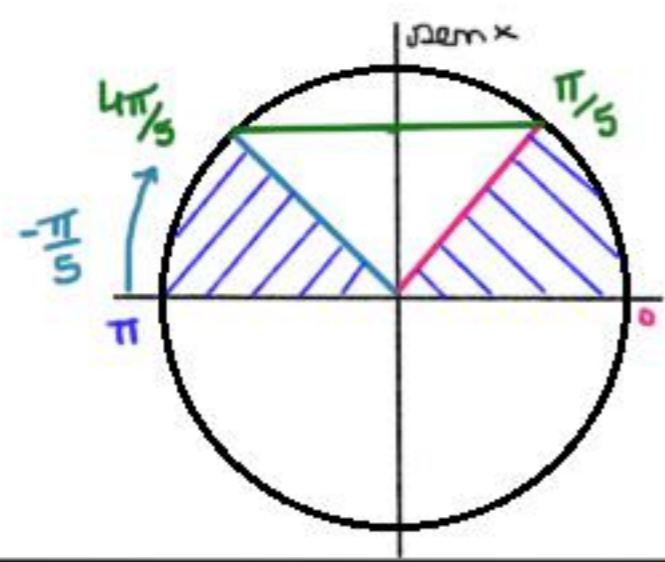


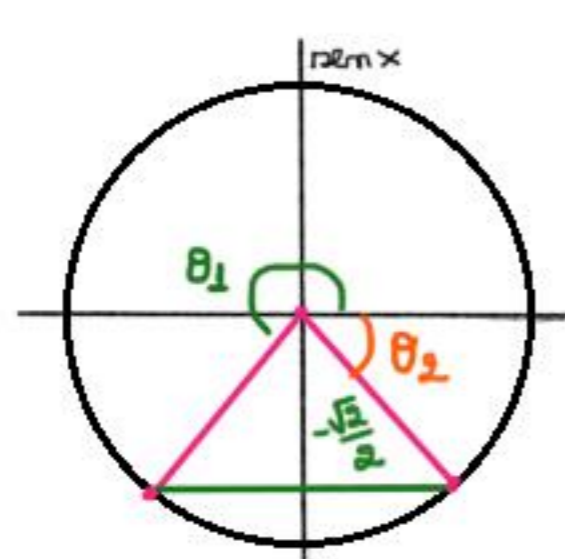
Resolva as seguintes equações, para $x \in \mathbb{R}$:

1. $\text{sen } x = \text{sen } \frac{\pi}{5}$



$x \in \mathbb{R} / x = \frac{\pi}{5} + 2k\pi$ ou $x = \frac{4\pi}{5} + 2k\pi$

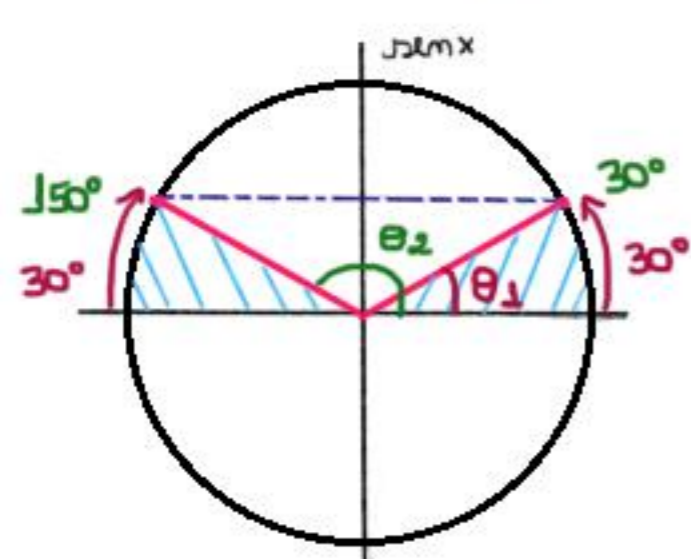
2. $\text{sen } x = \frac{-\sqrt{2}}{2}$



$\theta_1 = 225^\circ$ ($5\pi/4$)
 $\theta_2 = -45^\circ$ (ou 315°) ($-\pi/4$ ou $7\pi/4$)

$x \in \mathbb{R} / x = 5\pi/4 + 2k\pi$ ou $x = -\pi/4 + 2k\pi$

3. $\text{sen } 2x = \frac{1}{2}$



$2x = 30^\circ$ ou $2x = 150^\circ$
 $x = 15^\circ$ $x = 75^\circ$

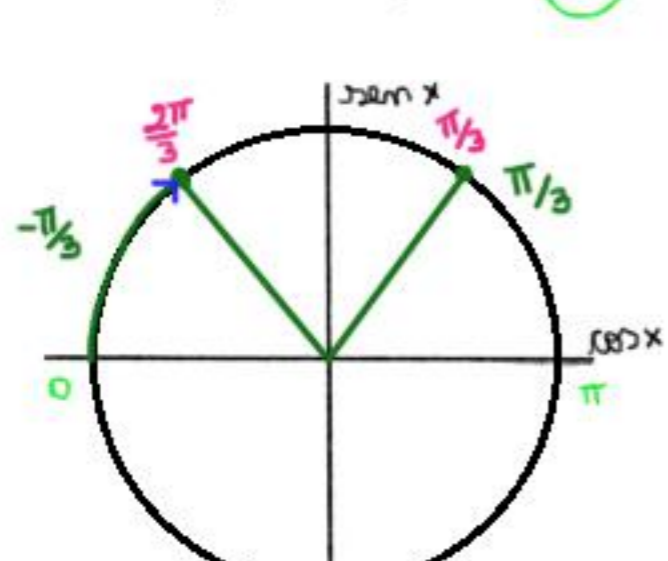
$x = \frac{15^\circ \pi}{180^\circ}$ $x = \frac{75^\circ \pi}{180^\circ}$

$x = \pi/12$ ou $x = 5\pi/12$

$x = \pi/12 + 2k\pi/2$ ou $x = 5\pi/12 + 2k\pi/2$

$x \in \mathbb{R} / x = \pi/12 + k\pi$ ou $x = 5\pi/12 + k\pi$

4. $\text{sen} \left(x - \frac{\pi}{3} \right) = \frac{\sqrt{3}}{2}$



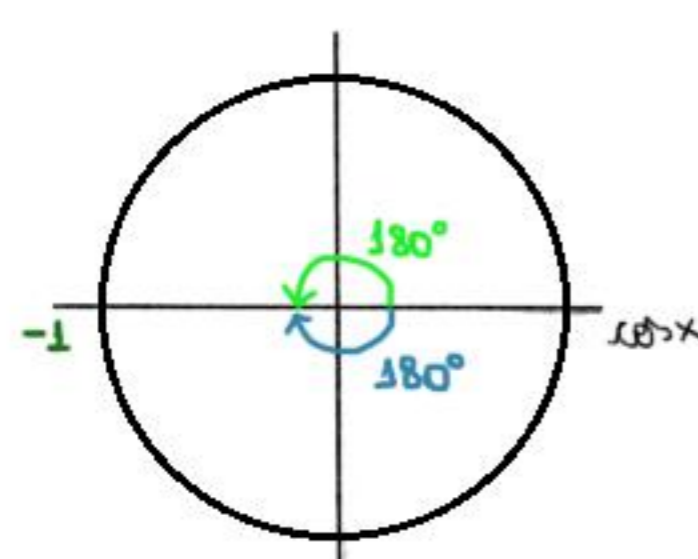
$\text{sen } \theta = \frac{\sqrt{3}}{2}$ $\theta = 60^\circ$ ou $\theta = 120^\circ$
 \downarrow \downarrow
 $\pi/3$ ou $2\pi/3$

$\left(x - \frac{\pi}{3} \right) = \frac{\pi}{3}$ $\rightarrow x = 2\pi/3$

ou $\left(x - \frac{\pi}{3} \right) = \frac{2\pi}{3}$ $\rightarrow x = \pi$

$x \in \mathbb{R} / x = 2\pi/3 + 2k\pi$ ou $x = \pi + 2k\pi$

5. $\text{cos } x = -1$



$x = 180^\circ$ ou $x = -180^\circ$

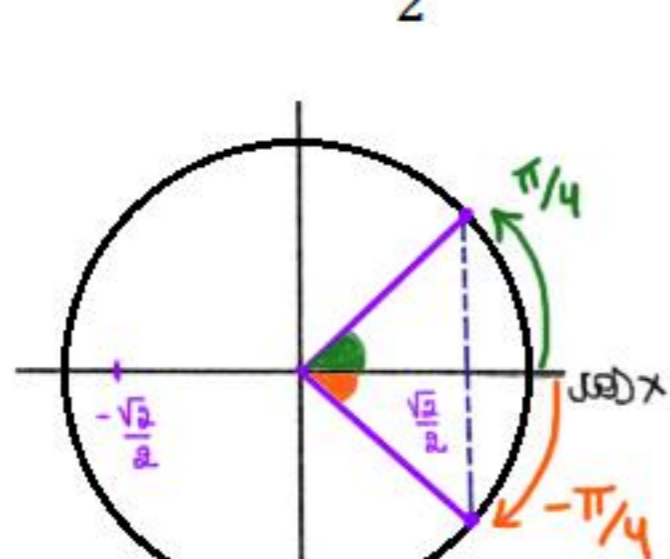
$x = \frac{180^\circ \pi}{180^\circ}$ $x = \frac{-180^\circ \pi}{180^\circ}$

$x = \pi$ ou $x = -\pi$

• os dois valores são iguais

$x \in \mathbb{R} / x = \pi + 2k\pi$

6. $\text{cos } x = \frac{\sqrt{2}}{2}$



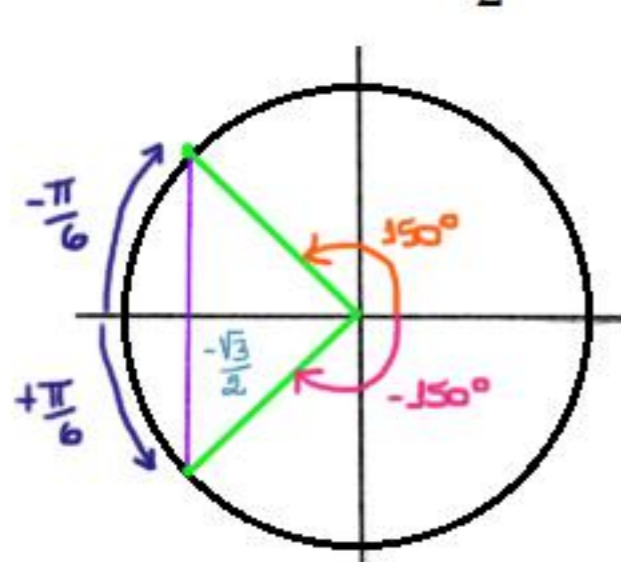
$x = \pi/4$ ou $x = -\pi/4$

este valor é equivalente a $2\pi - \pi/4$

ou $7\pi/4$

$x \in \mathbb{R} / x = \pm \pi/4 + 2k\pi$

7. $\text{cos } x = \frac{-\sqrt{3}}{2}$



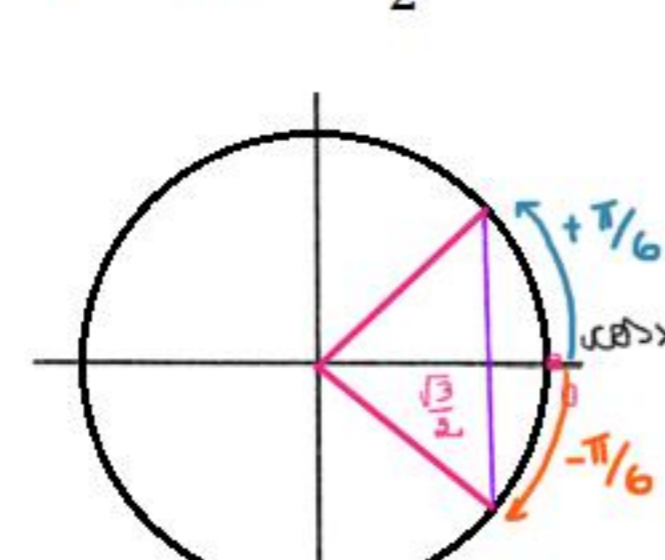
$x = 150^\circ$ ou $x = -150^\circ$

$x = \frac{150^\circ \pi}{180^\circ}$ $x = \frac{-150^\circ \pi}{180^\circ}$

$x = 5\pi/6$ ou $x = -5\pi/6$

$x \in \mathbb{R} / x = \pm 5\pi/6 + 2k\pi$

8. $\text{cos } 2x = \frac{\sqrt{3}}{2}$



$\text{cos } \theta = \sqrt{3}/2$

$\theta = -\pi/6$ ou $\theta = \pi/6$

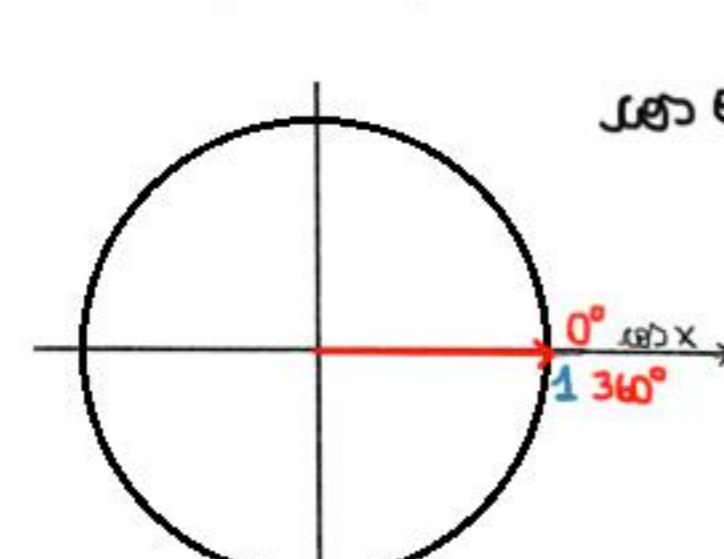
$2x = \theta$

$\theta = \frac{-\pi}{12}$ ou $\theta = \frac{\pi}{12}$

$x = \pm \pi/12 + 2k\pi/2$

$x \in \mathbb{R} / x = \pm \pi/12 + k\pi$

9. $\text{cos} \left(x - \frac{\pi}{4} \right) = 1$



$\text{cos } \theta = 1$

$\theta = 0^\circ$ ou 2π \rightarrow são o mesmo ponto

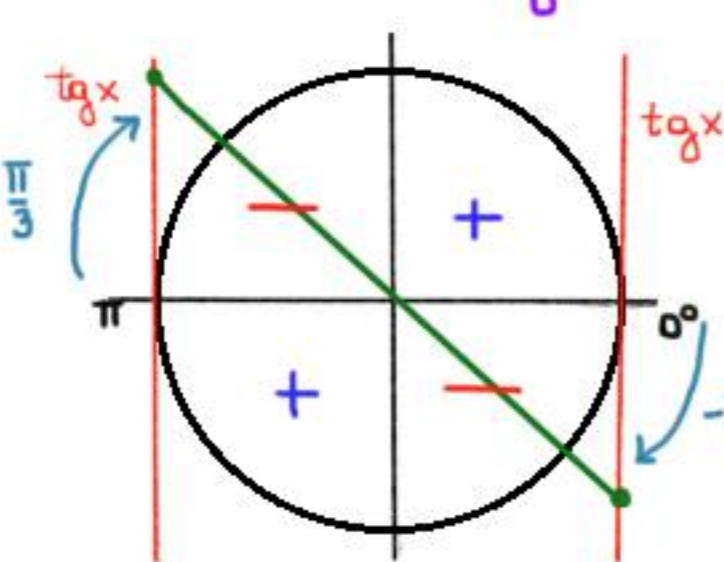
$\theta = x - \frac{\pi}{4}$

$0^\circ = x - \pi/4$ $\rightarrow x = \pi/4$

$x \in \mathbb{R} / x = \pi/4 + 2k\pi$

10. $\text{tg } x = -\sqrt{3}$

$\text{tg}(\pi/3) = \sqrt{3}$ \rightarrow (ângulo notável = $\pi/3$ ou 60°)



$x = (\pi - \pi/3)$ ou $x = 0 - \pi/3$

$x = 2\pi/3$ ou $x = -\pi/3$

$x \in \mathbb{R} / x = 2\pi/3 + k\pi$ ou $x = -\pi/3 + k\pi$

11. $\text{tg } 2x = \sqrt{3}$

$\text{tg } \theta = \sqrt{3}$

$\theta = (0 + \pi/3)$ ou $\theta = (\pi + \pi/3)$

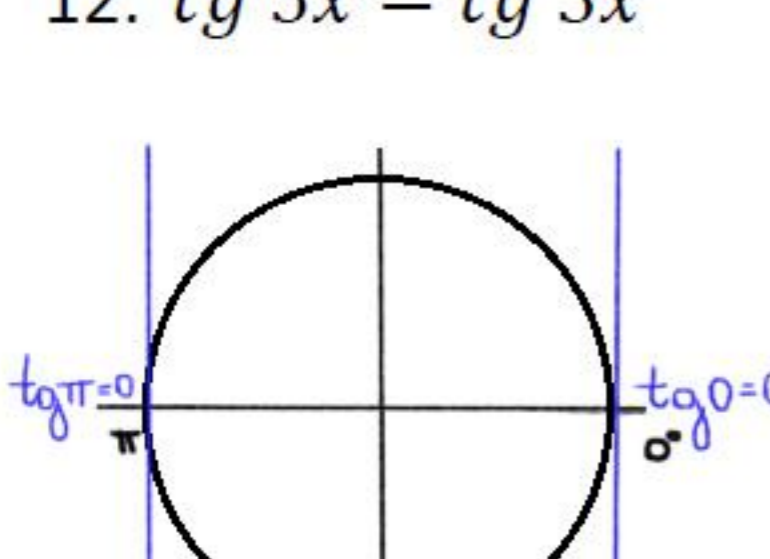
$\theta = \pi/3$ ou $\theta = 4\pi/3$

$\theta = 2x \rightarrow x = \pi/6$ ou $x = 2\pi/3$

$x = \pi/6 + k\pi/2$ ou $x = 2\pi/3 + k\pi/2$

$x \in \mathbb{R} / x = \pi/6 + k\pi/2$ ou $x = 2\pi/3 + k\pi/2$

12. $\text{tg } 5x = \text{tg } 3x$



$x \in \mathbb{R} / x = 0^\circ + k\pi$ \rightarrow a cada meio ciclo se repete.

ou

$x \in \mathbb{R} / x = k\pi, k$ deve ser inteiro