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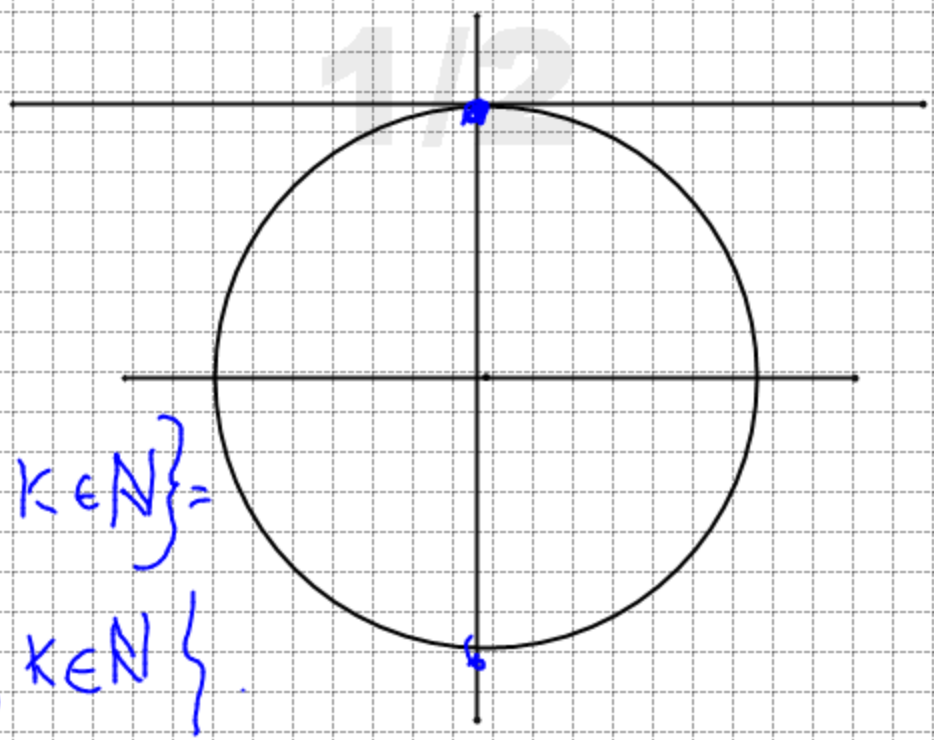
$$\operatorname{tg}\left(2x+\frac{\pi}{18}\right)=0$$



$$CE=\left\{x\in\mathbb{R}\,/\,2x+\frac{\pi}{18}\neq 0+k\pi,\ k\in\mathbb{N}\right\}=$$

$$=\left\{x\in\mathbb{R}\,/\,x\neq-\frac{\pi}{36}+k\frac{\pi}{2},\ k\in\mathbb{N}\right\}$$

$$2x+\frac{\pi}{18}=\frac{\pi}{2}+k\pi \quad k\in\mathbb{N}$$

$$\begin{cases} x=\frac{2}{9}\pi+k\frac{\pi}{2} & k\in\mathbb{N} \\ x\neq-\frac{\pi}{36}+k\frac{\pi}{2} & k\in\mathbb{N} \end{cases}$$

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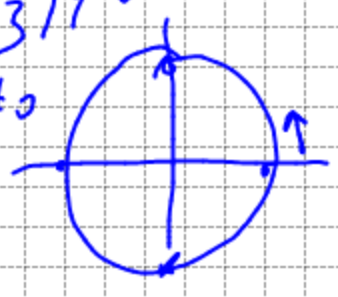
$\frac{\pi}{2} - \left(x + \frac{\pi}{3}\right) = \frac{\pi}{2} - x - \frac{\pi}{3} = \frac{\pi}{6} - x$

$\cos\left(x + \frac{\pi}{3}\right) \neq 0$

$\operatorname{sen}\left(\frac{\pi}{6} - x\right) \neq 0$



$$\operatorname{tg}\left(x + \frac{\pi}{3}\right) + \operatorname{cotg}\left(\frac{\pi}{6} - x\right) = 2$$

$$CE = \left\{ x \in \mathbb{R} \;/\; \begin{cases} x + \frac{\pi}{3} \neq \frac{\pi}{2} + k\pi, \; k \in \mathbb{N} \\ \frac{\pi}{6} - x \neq 0 + k\pi, \; k \in \mathbb{N} \end{cases} \right\} = \begin{cases} x \neq \frac{\pi}{6} + k\pi, \; k \in \mathbb{N} \\ x \neq \frac{\pi}{6} - k\pi, \; k \in \mathbb{N} \end{cases}$$

$$\frac{\operatorname{tg} x + \operatorname{tg}\frac{\pi}{3}}{1 - \operatorname{tg} x \operatorname{tg}\frac{\pi}{3}} + \frac{\operatorname{cotg}\frac{\pi}{6}\operatorname{cotg} x + 1}{\operatorname{cotg} x - \operatorname{cotg}\frac{\pi}{6}} = 2$$

$$\frac{\sqrt{3} + \operatorname{tg} x}{1 - \sqrt{3}\operatorname{tg} x} + \frac{\sqrt{3}\operatorname{cotg} x + 1}{\operatorname{cotg} x - \sqrt{3}} = 2$$

$$(\sqrt{3} + \operatorname{tg} x)(\operatorname{cotg} x - \sqrt{3}) + (\sqrt{3}\operatorname{cotg} x + 1)(1 - \sqrt{3}\operatorname{tg} x) = 2(1 - \sqrt{3}\operatorname{tg} x)(\operatorname{cotg} x - \sqrt{3})$$

$$\sqrt{3}\frac{\cos x}{\operatorname{sen} x} - 3 + 1 - \sqrt{3}\frac{\operatorname{sen} x}{\cos x} + \sqrt{3}\frac{\cos x}{\operatorname{sen} x} - 3 + 1 - \sqrt{3}\frac{\operatorname{sen} x}{\cos x} = 2\left(\frac{\cos x}{\operatorname{sen} x} - \sqrt{3} - \sqrt{3} + 3\frac{\operatorname{sen} x}{\cos x}\right)$$

$$2\sqrt{3}\frac{\cos x}{\operatorname{sen} x} - 4 - 2\sqrt{3}\frac{\operatorname{sen} x}{\cos x} = 2\frac{\cos x}{\operatorname{sen} x} - 4\sqrt{3} + 6\frac{\operatorname{sen} x}{\cos x}$$

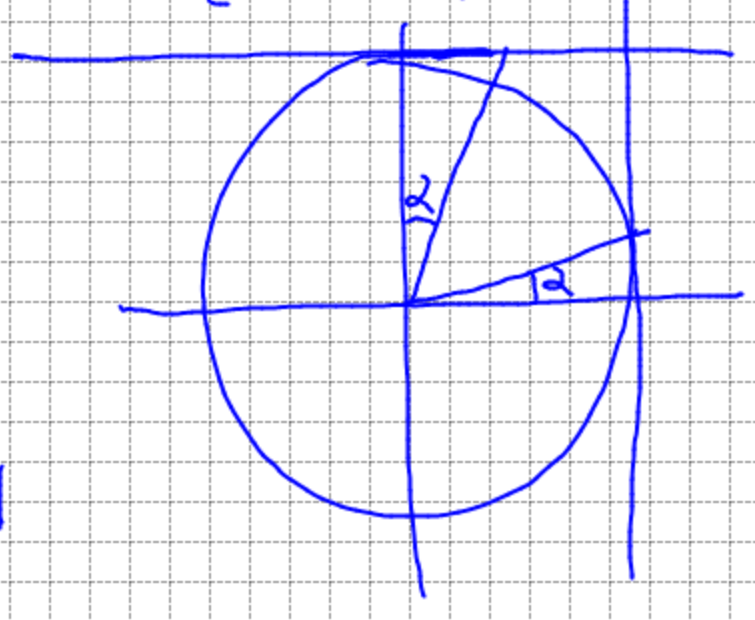
$$2\frac{\cos x}{\operatorname{sen} x}(\sqrt{3} - 1) - 2\frac{\operatorname{sen} x}{\cos x}(\sqrt{3} + 3) + 2(\sqrt{3} - 2) = 0$$

..... eq. 2º grado!

$$\operatorname{tg}\left(x + \frac{\pi}{3}\right) + \operatorname{cotg}\left(\frac{\pi}{6} - x\right) = 2$$

$x + \frac{\pi}{3} = \alpha$

$\frac{\pi}{2} - \alpha = \frac{\pi}{6} - x$



$$\operatorname{tg}\alpha + \operatorname{cotg}\left(\frac{\pi}{2} - \alpha\right) = 2$$

$$\operatorname{tg}\alpha + \operatorname{tg}\alpha = 2$$

$$2\operatorname{tg}\alpha = 2 \qquad \operatorname{tg}\alpha = 1$$

$$\operatorname{tg}\left(x + \frac{\pi}{3}\right) = 1$$

$$x + \frac{\pi}{3} = \frac{\pi}{4} + k\pi \quad k \in \mathbb{N}$$

$$x = -\frac{\pi}{12} + k\pi \quad k \in \mathbb{N}$$