296 $(3+\sqrt{3})\sin^2 x + 2\cos^2 x + (\sqrt{3}-1)\sin x\cos x = 3\,(\cos^2 x + \sin^2 x)$ $\left[\frac{3}{4}\pi + k\pi;\ \frac{\pi}{6} + k\pi\right]$

$$\cancel{3\sin^2 x} + \sqrt{3}\sin^2 x + 2\cos^2 x + (\sqrt{3}-1)\sin x\cos x = 3\cos^2 x + \cancel{3\sin^2 x}$$

$$\frac{\sqrt{3}\sin^2 x}{\cos^2 x} + (\sqrt{3}-1)\frac{\sin x\,\cancel{\cos x}}{\cancel{\cos^2} x} - \frac{\cancel{\cos^2 x}}{\cancel{\cos^2 x}} = 0$$

$$\sqrt{3}\tan^2 x + (\sqrt{3}-1)\tan x - 1 = 0$$

$$\sqrt{3}\tan^2 x + \sqrt{3}\tan x - \tan x - 1 = 0$$

$$\sqrt{3}\tan x(\tan x + 1) - (\tan x + 1) = 0$$

$$(\tan x + 1)(\sqrt{3}\tan x - 1) = 0$$

$$\tan x = -1 \quad \vee \quad \tan x = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\boxed{x = -\frac{\pi}{4} + k\pi \quad \vee \quad x = \frac{\pi}{6} + k\pi}$$

OPPURE

$$\Delta = (\sqrt{3}-1)^2 + 4\sqrt{3} =$$

$$= 3 + 1 - 2\sqrt{3} + 4\sqrt{3} =$$

$$= 3 + 1 + 2\sqrt{3} =$$

$$= (\sqrt{3}+1)^2$$

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

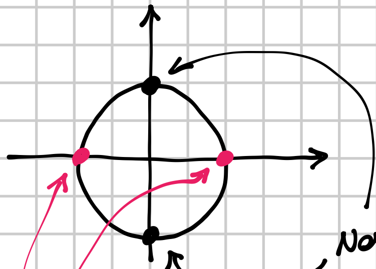
$$= \frac{-\sqrt{3}+\cancel{1}-\sqrt{3}-\cancel{1}}{2\sqrt{3}} = \frac{-2\sqrt{3}}{2\sqrt{3}} = -1$$

$$= \frac{-\cancel{\sqrt{3}}+1+\cancel{\sqrt{3}}+1}{2\sqrt{3}} = \frac{\cancel{2}}{\cancel{2}\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

388 $\dfrac{1+\cos x}{\tan x} = \dfrac{5\cos^2 x - \cos x}{\sin x}$ $\qquad \left[\pm\dfrac{\pi}{3}+2k\pi\right]$

$\dfrac{\sin x}{\cos x}$

C.E.



NON ESISTE $\tan x$

$x \neq \dfrac{\pi}{2} + k\pi$

LA TANGENTE SI ANNULLA

$x \neq k\pi$

$\Downarrow$

$x \neq k\dfrac{\pi}{2}$

$$\frac{\cos x(1+\cos x)}{\cancel{\sin x}} = \frac{5\cos^2 x - \cos x}{\cancel{\sin x}}$$

$$\cos x + \cos^2 x = 5\cos^2 x - \cos x$$

$$4\cos^2 x - 2\cos x = 0$$

$$2\cancel{\cos x}\,(2\cos x - 1) = 0 \Rightarrow 2\cos x - 1 = 0$$

$\cos x = 0$ NON È ACCETTABILE PER C.E.

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

$$\boxed{x = \pm\frac{\pi}{3} + 2k\pi}$$

430 $|\cos x| = |\cos 2x + 1|$

$\pm \cos x = \cos 2x + 1$

$\pm \cos x = 2\cos^2 x \cancel{-1} \cancel{+1}$

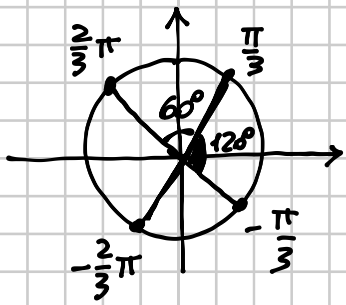
$2\cos^2 x = \cos x \quad \vee \quad 2\cos^2 x = -\cos x$

$2\cos^2 x - \cos x = 0 \qquad 2\cos^2 x + \cos x = 0$

$\cos x (2\cos x - 1) = 0 \qquad \cos x (2\cos x + 1) = 0$

$\cos x = 0 \quad \vee \quad \cos x = \frac{1}{2} \quad \vee \quad \cos x = -\frac{1}{2}$

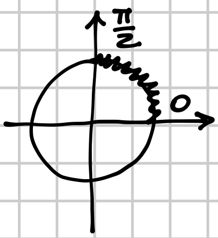
$x = \frac{\pi}{2} + k\pi \quad \vee \quad x = \pm \frac{\pi}{3} + 2k\pi \quad \vee \quad x = \pm \frac{2}{3}\pi + 2k\pi$



$$\boxed{x = \frac{\pi}{2} + k\pi \quad \vee \quad x = \frac{\pi}{3} + k\pi \quad \vee \quad x = \frac{2}{3}\pi + k\pi}$$

435 $\ln \sin x + \ln 2\cos x = 0$ $\left[\frac{\pi}{4} + 2k\pi\right]$

$\begin{cases} \sin x > 0 \\ \cos x > 0 \end{cases}$



C.E.

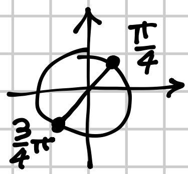
$2k\pi < x < \frac{\pi}{2} + 2k\pi$

$\ln(a \cdot b) = \ln a + \ln b$

$a, b > 0$

$\ln(\sin x \cdot 2\cos x) = 0 \qquad e^{\ln(\sin x \cdot 2\cos x)} = e^0$

$2\sin x \cos x = 1 \qquad \sin 2x = 1 \qquad 2x = \frac{\pi}{2} + 2k\pi$



$x = \frac{\pi}{4} + k\pi$

VANNO ESCLUSI I K DISPARI (escono da C.E.)

$$\boxed{x = \frac{\pi}{4} + 2k\pi}$$

Risolvi le seguenti disequazioni nell'intervallo $[0; 2\pi]$.

501 $2 \sin x > 1$ $\left[\frac{\pi}{6} < x < \frac{5}{6}\pi\right]$

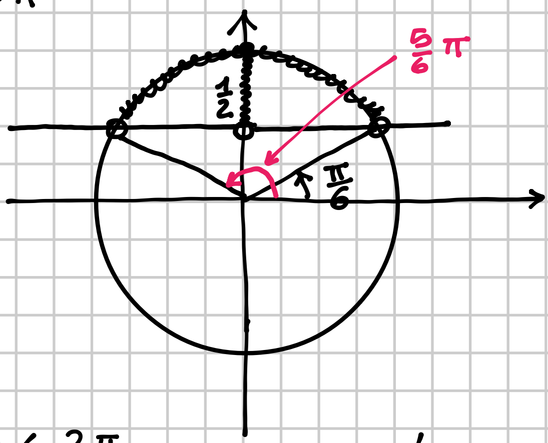
502 $3 \tan x > \sqrt{3}$ $\left[\frac{\pi}{6} < x < \frac{\pi}{2} \vee \frac{7}{6}\pi < x < \frac{3}{2}\pi\right]$

$\boxed{501}$

$2 \sin x > 1$ $0 \leq x \leq 2\pi$

$\sin x > \frac{1}{2}$

$$\boxed{\frac{\pi}{6} < x < \frac{5}{6}\pi}$$



$\boxed{502}$ $3 \tan x > \sqrt{3}$ $0 \leq x \leq 2\pi$

$\tan x > \frac{\sqrt{3}}{3}$

$$\boxed{\begin{array}{c} \frac{\pi}{6} < x < \frac{\pi}{2} \\ \vee \\ \frac{7}{6}\pi < x < \frac{3}{2}\pi \end{array}}$$