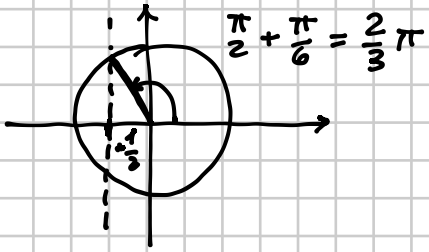
11/11/2022

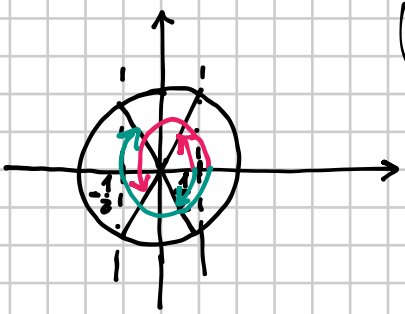
73 $2|\cos x| = 1$ $\left[\pm\frac{\pi}{3} + k\pi\right]$

$|\cos x| = \frac{1}{2} \Rightarrow \cos x = \pm\frac{1}{2}$

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



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



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

62 $\cos x - 4 = 3\cos x + 8$ [impossibile]

$\cos x - 3\cos x = 8 + 4$

$-2\cos x = 12$

$\cos x = -6$ IMPOSSIBILE perché $-1 \le \cos x \le 1 \quad \forall x$

81 $2\cos x - 2\cos 45° = 2(\sqrt{2}\ \sin 60° - \cos x)$ [$\pm 15° + k360°$]

$2\cos x - 2\cdot\frac{\sqrt{2}}{2} = 2\left(\sqrt{2}\cdot\frac{\sqrt{3}}{2} - \cos x\right)$

$2\cos x - \sqrt{2} = \sqrt{6} - 2\cos x$

$4\cos x = \sqrt{6} + \sqrt{2}$

$\cos x = \frac{\sqrt{6}+\sqrt{2}}{4}$ $\qquad$ $x = \pm 15° + k360°$

105 $\left|\tan\left(x - \frac{\pi}{3}\right)\right| = \sqrt{3}$ $\left[k\pi; \frac{2}{3}\pi + k\pi\right]$

$\tan\left(x - \frac{\pi}{3}\right) = \pm\sqrt{3}$

$\tan\left(x - \frac{\pi}{3}\right) = -\sqrt{3}$ $\quad \vee \quad$ $\tan\left(x - \frac{\pi}{3}\right) = \sqrt{3}$

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

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

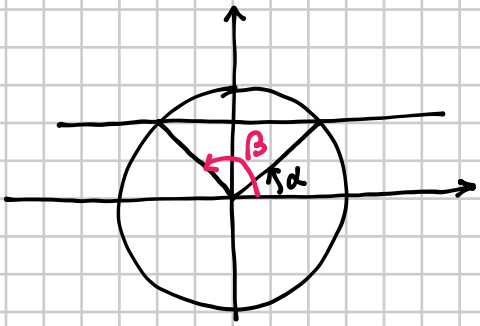
119 $\sin\left(2x+\frac{\pi}{5}\right)=\sin\left(5x+\frac{\pi}{2}\right)$

$\left[-\frac{\pi}{10}-\frac{2}{3}k\pi;\frac{3}{70}\pi+\frac{2}{7}k\pi\right]$

$\sin\alpha=\sin\beta$

$\Downarrow$

$\alpha=\beta+2k\pi \quad \vee \quad \alpha=\pi-\beta+2k\pi$



$2x+\frac{\pi}{5}=5x+\frac{\pi}{2}+2k\pi \quad \vee \quad 2x+\frac{\pi}{5}=\pi-\left(5x+\frac{\pi}{2}\right)+2k\pi$

$\frac{\pi}{2}$

$-3x=\frac{\pi}{2}-\frac{\pi}{5}+2k\pi \quad \vee \quad 2x+\frac{\pi}{5}=\pi-5x-\frac{\pi}{2}+2k\pi$

$-3x=\frac{5\pi-2\pi}{10}+2k\pi \quad \vee \quad 7x=\frac{\pi}{2}-\frac{\pi}{5}+2k\pi$

$-3x=\frac{3}{10}\pi+2k\pi \quad \vee \quad 7x=\frac{3}{10}\pi+2k\pi$

$$x=-\frac{\pi}{10}+\frac{2}{3}k\pi \quad \vee \quad x=\frac{3}{70}\pi+\frac{2}{7}k\pi$$

132 $\cos\left(5x-\frac{2}{3}\pi\right)=\cos\left(3x+\frac{\pi}{4}\right)$ $\left[\frac{11}{24}\pi+k\pi;\frac{5}{96}\pi+k\frac{\pi}{4}\right]$

$\cos\alpha=\cos\beta \qquad \alpha=\pm\beta+2k\pi$

$5x-\frac{2}{3}\pi=3x+\frac{\pi}{4}+2k\pi \quad \vee \quad 5x-\frac{2}{3}\pi=-3x-\frac{\pi}{4}+2k\pi$

$2x=\frac{2}{3}\pi+\frac{\pi}{4}+2k\pi \quad \vee \quad 8x=\frac{2}{3}\pi-\frac{\pi}{4}+2k\pi$

$2x=\frac{8\pi+3\pi}{12}+2k\pi \quad \vee \quad 8x=\frac{8\pi-3\pi}{12}+2k\pi$

$x=\frac{11}{24}\pi+k\pi \quad \vee \quad x=\frac{5}{96}\pi+k\frac{\pi}{4}$

129 $\sin\left(4x-\frac{\pi}{10}\right)=-\cos\left(3x+\frac{\pi}{5}\right)$ $\left[-\frac{\pi}{5}+2k\pi;\frac{\pi}{5}+\frac{2}{7}k\pi\right]$

$\cos\alpha=\sin\left(\frac{\pi}{2}-\alpha\right)$ ANGOLI ASSOCIATI

$$\sin\left(4x-\frac{\pi}{10}\right)=-\sin\left(\frac{\pi}{2}-\left(3x+\frac{\pi}{5}\right)\right)$$

$$\sin\left(4x-\frac{\pi}{10}\right)=-\sin\left(\frac{\pi}{2}-3x-\frac{\pi}{5}\right)$$

$-\sin\alpha=\sin(-\alpha)$

$$\sin\left(4x-\frac{\pi}{10}\right)=\sin\left(-\frac{\pi}{2}+3x+\frac{\pi}{5}\right)$$

$-\frac{\pi}{2}+\frac{\pi}{5}=\frac{-5+2}{10}\pi=-\frac{3}{10}\pi$

$$\sin\left(4x-\frac{\pi}{10}\right)=\sin\left(3x-\frac{3}{10}\pi\right)$$

$$4x-\frac{\pi}{10}=3x-\frac{3}{10}\pi+2k\pi \quad \vee \quad 4x-\frac{\pi}{10}=\pi-3x+\frac{3}{10}\pi+2k\pi$$

$$x=-\frac{\pi}{5}+2k\pi \quad \vee \quad 7x=\frac{7}{5}\pi+2k\pi$$

$$\boxed{x=-\frac{\pi}{5}+2k\pi \quad \vee \quad x=\frac{\pi}{5}+\frac{2}{7}k\pi}$$