EQUAZIONI RICONDUCIBILI A ELEMENTARI

167 $3+4\cos^2 x-4\sqrt{3}\cos x=0$ $\left[\pm\frac{\pi}{6}+2k\pi\right]$

$$\left(\sqrt{3}-2\cos x\right)^2=0$$

$$\Downarrow$$

$$2\cos x=\sqrt{3} \qquad \cos x=\frac{\sqrt{3}}{2}$$

$$\boxed{x=\pm\frac{\pi}{6}+2K\pi}$$

179 $2\sin^2 x-5\sin x+1=2\left(\cos^2 x-\frac{1}{2}\right)$ $[k\pi]$

$$2\sin^2 x-5\sin x+1=2\cos^2 x-1$$

$$2\sin^2 x-5\sin x+1=2(1-\sin^2 x)-1$$

$$2\sin^2 x-5\sin x+\cancel{1}=\cancel{2}-2\sin^2 x-\cancel{1}$$

$$4\sin^2 x-5\sin x=0$$

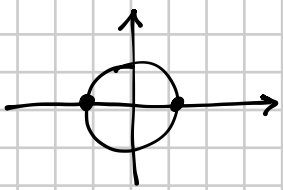
$$\sin x(4\sin x-5)=0$$

$$\sin x=0 \quad \vee \quad 4\sin x-5=0 \Rightarrow \sin x=\frac{5}{4}$$

IMPOSSIBILE perché $\frac{5}{4}>1$

$$\Downarrow$$

$$x=K\pi$$



$$\boxed{x=K\pi}$$

182 $5\sin(\pi - x) + 4 - 2\cos^2 x = 0$

$5\sin x + 4 - 2(1 - \sin^2 x) = 0$

$5\sin x + 4 - 2 + 2\sin^2 x = 0$

$2\sin^2 x + 5\sin x + 2 = 0 \qquad \Delta = 25 - 16 = 9$

$$\sin x = \frac{-5 \pm 3}{4} = \begin{cases} -\frac{8}{4} = -2 & \text{NON ACC.} \\ -\frac{2}{4} = -\frac{1}{2} \end{cases}$$

$\sin x = -\frac{1}{2} \qquad x = -\frac{\pi}{6} + 2k\pi \quad \vee \quad x = \pi - \left(-\frac{\pi}{6}\right) + 2k\pi$

$$\boxed{x = -\frac{\pi}{6} + 2k\pi \quad \vee \quad x = \frac{7}{6}\pi + 2k\pi}$$

221 $\sqrt{2}\sin 2x + 2\cos x - \sqrt{2}\sin x - 1 = 0$

$2\sqrt{2}\sin x\cos x + 2\cos x - \sqrt{2}\sin x - 1 = 0$

$\sqrt{2}\sin x(2\cos x - 1) + (2\cos x - 1) = 0$

$(2\cos x - 1)(\sqrt{2}\sin x + 1) = 0$

$2\cos x - 1 = 0 \quad \vee \quad \sqrt{2}\sin x + 1 = 0$

$\Downarrow \qquad\qquad \Downarrow$

$\cos x = \frac{1}{2} \qquad\qquad \sin x = -\frac{1}{\sqrt{2}} = -\frac{\sqrt{2}}{2} \qquad \pi - \left(-\frac{\pi}{4}\right)$

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