

EQUAZIONI GONIOMETRICHE OMOGENEE



M4021

EQUAZIONI OMOGENEE

$$a \sin^2 x + b \sin x \cos x + c \cos^2 x = 0$$

$$\text{ES } 2 \sin^2 x + 3 \sin x \cdot \cos x - 5 \cos^2 x = 0 \quad \checkmark \quad \text{SI}$$

$$\text{ES } 2 \sin^2 x + 3 \sin x + 5 \cos x - 7 \cos^2 x = 0 \quad \times \quad \text{NO}$$

METODO DI RISOLUZIONE : $\div \cos^2 x$

$$3 \sin^2 x + 2\sqrt{3} \sin x \cos x + \cos^2 x = 0 \quad \div \cos^2 x \quad \text{CHE NON È NULLO}$$

$$\frac{3 \sin^2 x}{\cos^2 x} + \frac{2\sqrt{3} \sin x \cancel{\cos x}}{\cancel{\cos^2 x}} + \frac{\cos^2 x}{\cos^2 x} = 0$$

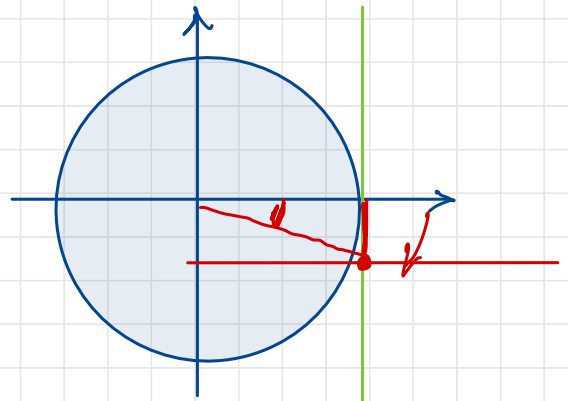
$$3 \operatorname{tg}^2 x + 2\sqrt{3} \operatorname{tg} x + 1 = 0 \quad \operatorname{tg} x = t$$

$$3 t^2 + 2\sqrt{3} t + 1 = 0 \quad a=3 ; b=2\sqrt{3} ; c=1$$
$$\Delta = 12 - 4 \cdot 3 \cdot 1 = 0$$

$$x_{1,2} = \frac{-2\sqrt{3} \pm 0}{6} = -\frac{\cancel{2}\sqrt{3}}{\cancel{3}} = -\frac{\sqrt{3}}{3}$$

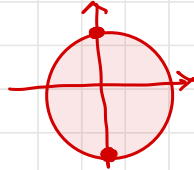
$$\operatorname{tg} x = -\frac{\sqrt{3}}{3}$$

$$x = -\frac{\pi}{6} + k\pi \Rightarrow -\frac{\pi}{6} + 1\pi = \frac{5}{6}\pi + k\pi$$



⊗ $\cos^2 x \neq 0$? $\cos^2 \frac{5}{6}\pi = \left(-\frac{\sqrt{3}}{2}\right)^2 = \frac{3}{4}$ CHE È $\neq 0$ OK!

QUANDO $\cos^2 x = 0$?



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

AVREMMO AVUTO : $3 \sin^2 \frac{\pi}{2} + 2\sqrt{3} \sin \frac{\pi}{2} \cos \frac{\pi}{2} + \cos^2 \frac{\pi}{2} = 0$

$$3 + 2\sqrt{3} \cdot 1 \cdot 0 + 0 = 0 \quad 3 = 0$$

IN UNA OMOGENEA DIVIDI TRANQUILLO PER $\cos^2 x$