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

$2\cos^2 x + \sqrt{3}\operatorname{sen} x - 2 > 0$

$2(1-\operatorname{sen}^2 x) + \sqrt{3}\operatorname{sen} x - 2 > 0$

$\cancel{2} - 2\operatorname{sen}^2 x + \sqrt{3}\operatorname{sen} x \cancel{-2} > 0$

$-2\operatorname{sen}^2 x + \sqrt{3}\operatorname{sen} x > 0$

$\operatorname{sen} x(-2\operatorname{sen} x + \sqrt{3}) > 0$

$\boxed{\operatorname{sen} x = t}$

$t(-2t + \sqrt{3}) > 0$

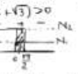
N_1 $\boxed{t > 0}$

N_2 $-2t + \sqrt{3} > 0$

$-2t > -\sqrt{3}$

$2t < \sqrt{3}$

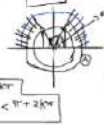
$\boxed{t < \frac{\sqrt{3}}{2}}$



$0 < t < \frac{\sqrt{3}}{2} \Rightarrow \boxed{\begin{cases} t < \frac{\sqrt{3}}{2} \\ t > 0 \end{cases}}$

A $\operatorname{sen} x < \frac{\sqrt{3}}{2}$

B $\operatorname{sen} x > 0$



$\frac{120}{180}$

$\boxed{\begin{array}{l} 2k\pi < x < \frac{\pi}{3} + 2k\pi \\ \frac{2}{3}\pi + 2k\pi < x < \pi + 2k\pi \end{array}}$

$\operatorname{sen}^2 x + 4\operatorname{sen} x\cos x + \cos^2 x < 0$

$\cos^2 x$

$\boxed{tg^2 x + 4\,tg\,x + 1 < 0}$

$\boxed{\begin{array}{l} \cos^2 x \neq 0 \\ \cos x \neq 0 \\ x \neq \frac{\pi}{2} + k\pi \\ k \in \mathbb{Z} \end{array}}$

$t^2 + 4t + 1 < 0$ $\quad tg\,x = t$

$\Delta = b^2 - 4ac = 16 - 4 = 12$

$t_1 t_2 = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm \sqrt{12}}{2} = \frac{-4 \pm 2\sqrt{3}}{2}$

$= \frac{\cancel{2}(-2 \pm \sqrt{3})}{\cancel{2}} = -2 \pm \sqrt{3}$

$12 = 2^2 \cdot 3$

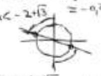
$\sqrt{12} = \sqrt{2^2 \cdot 3} = 2\sqrt{3}$

$t_1 = -2 - \sqrt{3}$ $\quad t_2 = -2 + \sqrt{3}$

$-2 - \sqrt{3} < t < -2 + \sqrt{3}$

$\begin{cases} t < -2 + \sqrt{3} \\ t > -2 - \sqrt{3} \end{cases}$ $\quad$ $\begin{cases} \text{A}\ tg\,x < -2 + \sqrt{3} \\ \text{B}\ tg\,x > -2 - \sqrt{3} \end{cases}$

A $tg\,x < -2 + \sqrt{3}$ $= -0{,}26$



$165°$

$\pi - \frac{\pi}{12} = \frac{12\pi - \pi}{12} = \frac{11\pi}{12}$

B $tg\,x > -2 - \sqrt{3}$

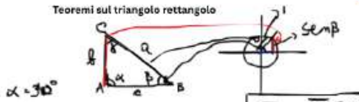
$\pi - \frac{5}{12}\pi = \frac{12\pi - 5\pi}{12} = \frac{7\pi}{12}$

$\boxed{\frac{7}{12}\pi + k\pi < x < \frac{11\pi}{12} + k\pi \quad k \in \mathbb{Z}}$

TRIGONOMETRIA

Studio della goniometria applicato
alla geometria euclidea e analitica.
Noi ci occupiamo solo dei triangoli.

Teoremi sul triangolo rettangolo



$$\text{sen}\,\beta = \frac{\overline{AC}}{\overline{BC}} \Longrightarrow \boxed{\overline{AC} = \overline{BC}\,\text{sen}\,\beta}$$

Dunque il cateto altezza di un triangolo
rettangolo corrisponde al prodotto fra
l'ipotenusa dello stesso triangolo e il seno dell'angolo opposto al
cateto di
partenza.

CONSEGUENZA

$$\boxed{\text{sen}\,\gamma = \frac{\overline{AB}}{\overline{BC}} \Longrightarrow \overline{AB} = \overline{BC} \cdot \text{sen}\,\gamma}$$

$$\cos\beta = \frac{\overline{AB}}{\overline{BC}} \Longrightarrow \boxed{\overline{AB} = \overline{BC}\cos\beta}$$

Dunque il cateto base di un triangolo
rettangolo risulta essere il prodotto
dell'ipotenusa dello stesso triangolo
e il coseno dell'angolo adiacente allo
stesso cateto.

CONSEGUENZA

$$\boxed{\cos\gamma = \frac{\overline{AC}}{\overline{BC}} \Longrightarrow \overline{AC} = \overline{BC}\cos\gamma}$$

$$\boxed{\begin{array}{ll} b = a\,\text{sen}\,\beta & c = a\cos\beta \\ c = a\,\text{sen}\,\gamma & b = a\cos\gamma \end{array}}$$

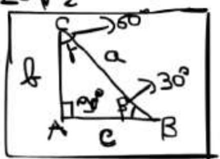
$$\boxed{a = \frac{b}{\text{sen}\,\beta} = \frac{c}{\text{sen}\,\gamma} = \frac{c}{\cos\beta} = \frac{b}{\cos\gamma}}$$

RISOLUZIONE DI UN TRIANGOLO

Risolvere un triangolo equivale, in trigonometria, a determinare di quel determinato triangolo tutti i suoi elementi: tutti e 3 i lati e tutti e 3 gli angoli.

ES

$b = 20\sqrt{2} \qquad c = 20\sqrt{6}$



$$a = \sqrt{b^2 + c^2} = \sqrt{(20\sqrt{2})^2 + (20\sqrt{6})^2}$$

$$= \sqrt{800 + 2400} = \sqrt{3200}$$

$$\begin{array}{r|l} 3200 & 2\cdot 5 \\ 320 & 2\cdot 5 \\ 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ 1 & \end{array}$$

$3200 = 2^7 \cdot 5^2$

$\sqrt{3200} = \sqrt{2^7 \cdot 5^2} =$

$= 5\sqrt{2^7} = 5\sqrt{2^6 \cdot 2^1} =$

$= 5 \cdot 2^3 \cdot \sqrt{2} = 40\sqrt{2}$

$$\boxed{a = 40\sqrt{2}}$$

$$\text{sen}\,\beta = \frac{b}{a} = \cancel{\frac{20\sqrt{2}}{40\sqrt{2}}} = \frac{1}{2}$$

$$\boxed{\beta = \text{arcsen}\,\frac{1}{2}}$$

$$\text{sen}\,\beta = \frac{1}{2} \Longrightarrow \beta = \underline{30^\circ}$$

$$\gamma = 180^\circ - (\alpha + \beta) = 180^\circ - (90^\circ + 30^\circ) =$$

$$= 180^\circ - 120^\circ = \underline{60^\circ}$$