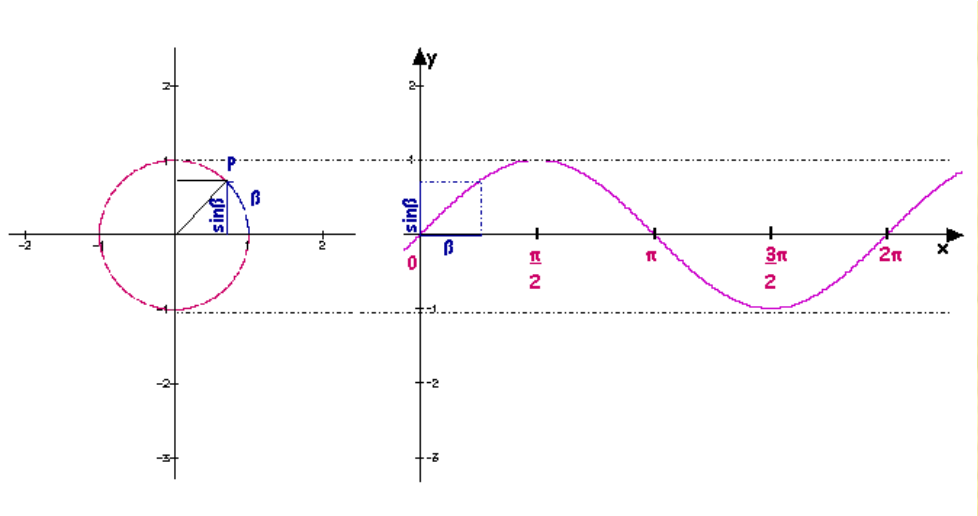
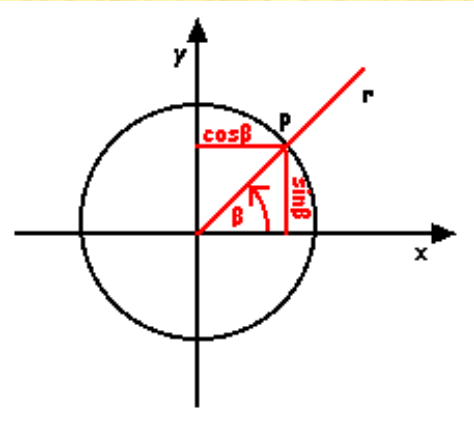


Equazioni goniometriche

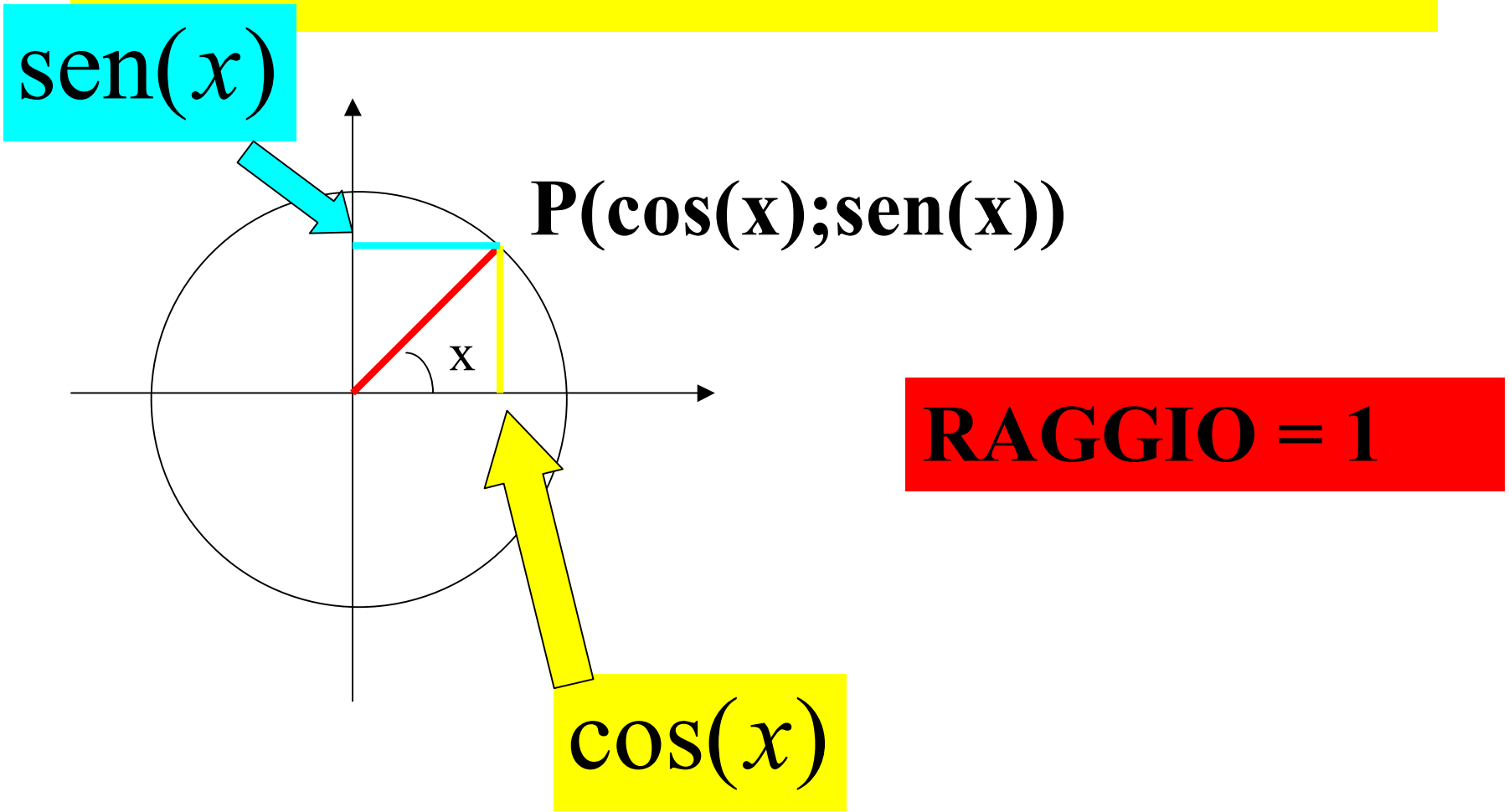
Appunti delle lezioni di matematica

di

A. Pisani



La circonferenza goniometrica

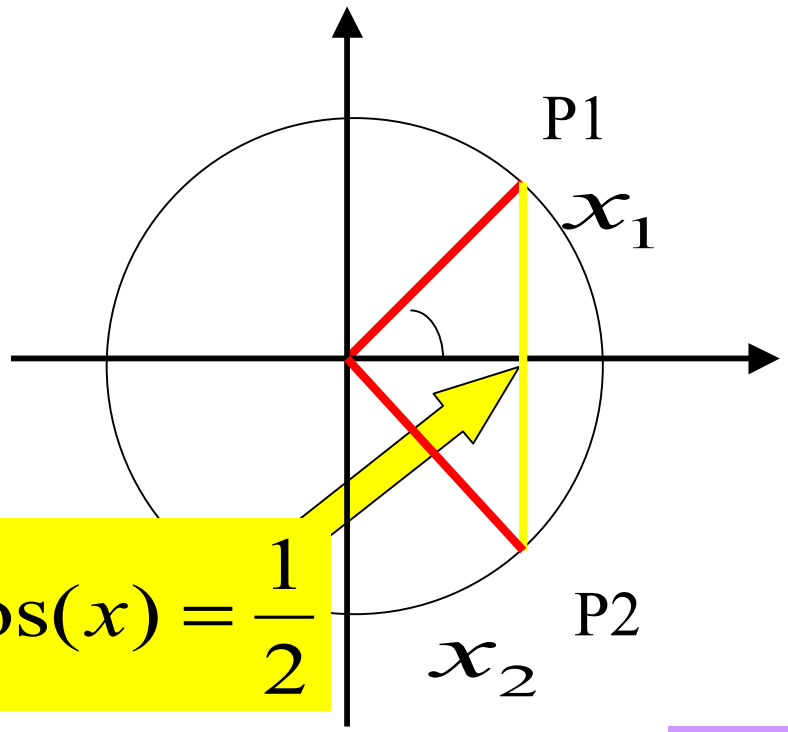


Equazione in cos(x)

Risolviamo l'equazione seguente:
e cerchiamo le soluzioni principali.

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

$$0 \le x \le 2\pi$$



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

$$x_1 = \arccos\left(\frac{1}{2}\right) = \frac{\pi}{3}$$

$$\cos(2\pi - \alpha) = \cos(\alpha)$$

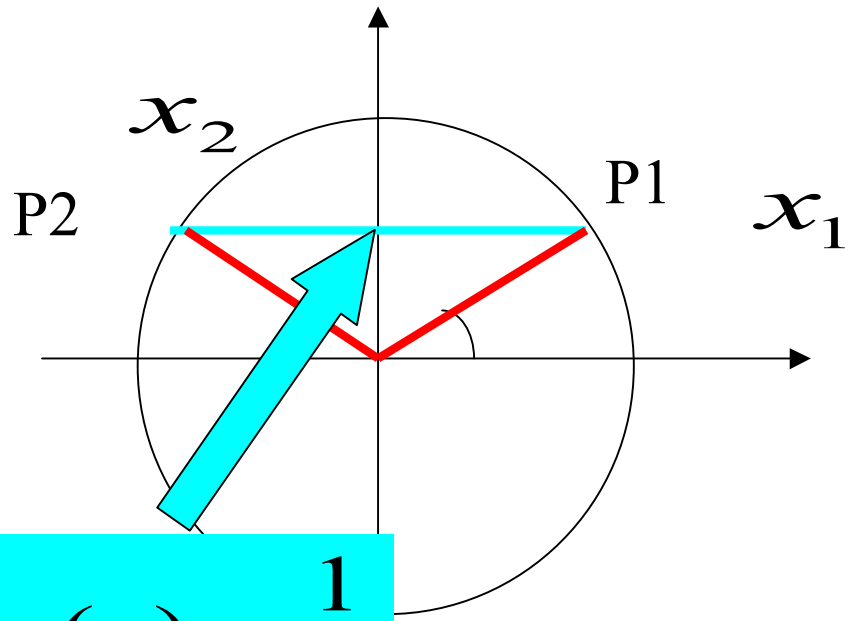
$$x_2 = 2\pi - \frac{\pi}{3} = \frac{5}{3}\pi$$

Equazione in sen(x)

Risolviamo l'equazione seguente:
e cerchiamo le soluzioni principali.

$$\operatorname{sen}(x) = \frac{1}{2}$$

$$0 \le x \le 2\pi$$



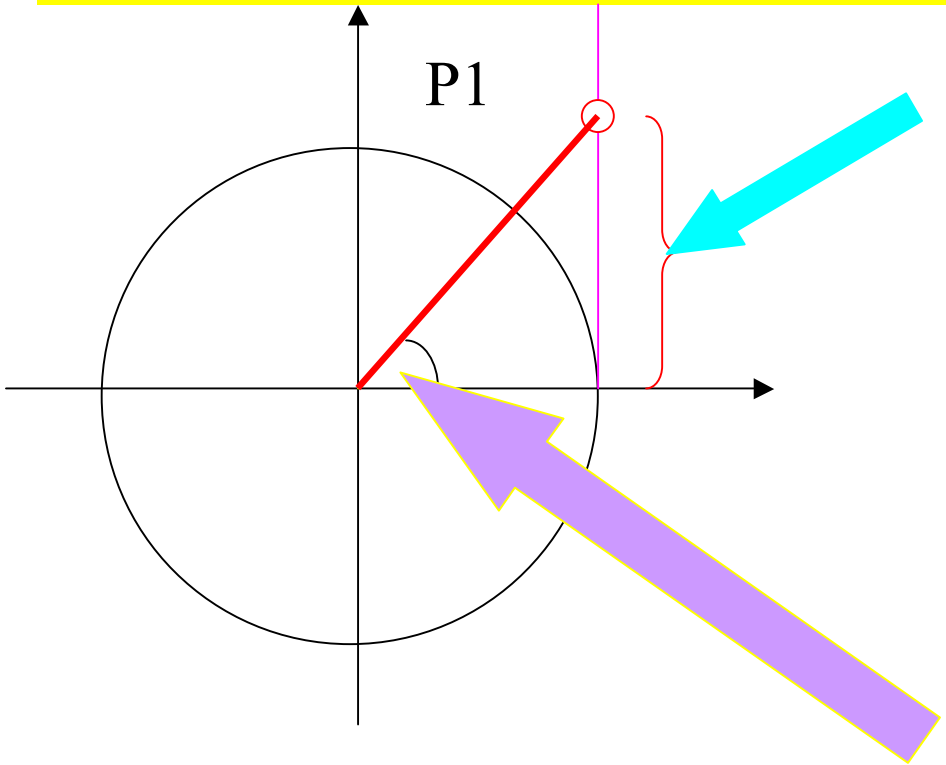
$$\operatorname{sen}(x) = \frac{1}{2}$$

$$x_1 = \operatorname{arcsen}\left(\frac{1}{2}\right) = \frac{\pi}{6}$$

$$\operatorname{sen}(\pi - \alpha) = \operatorname{sen}(\alpha)$$

$$x_2 = \pi - \frac{\pi}{6} = \frac{5}{6}\pi$$

Equazione in tan(x)



$$\tan(x) = \sqrt{3}$$

$$0 \le x \le \pi$$

$$x_1 = \operatorname{arctg}\left(\sqrt{3}\right) = \frac{\pi}{3}$$

Riassumendo

$$\operatorname{sen}(x) = a$$

SE $-1 \leq a \leq 1$

ALLORA: ho due soluzioni principali

$$x_1 = \operatorname{arcsen}(a) \qquad x_2 = \pi - x_1$$

Riassumendo

$$\cos(x) = b$$

SE $-1 \leq b \leq 1$

ALLORA: ho due soluzioni principali

$$x_1 = \arccos(b) \qquad x_2 = 2\pi - x_1$$

Riassumendo

$$\tan(x) = c$$

In ogni caso $\forall c$

ALLORA: ho una soluzione principale

$$x_1 = \operatorname{arctg}(c) \qquad 0 \le x_1 \le \pi$$