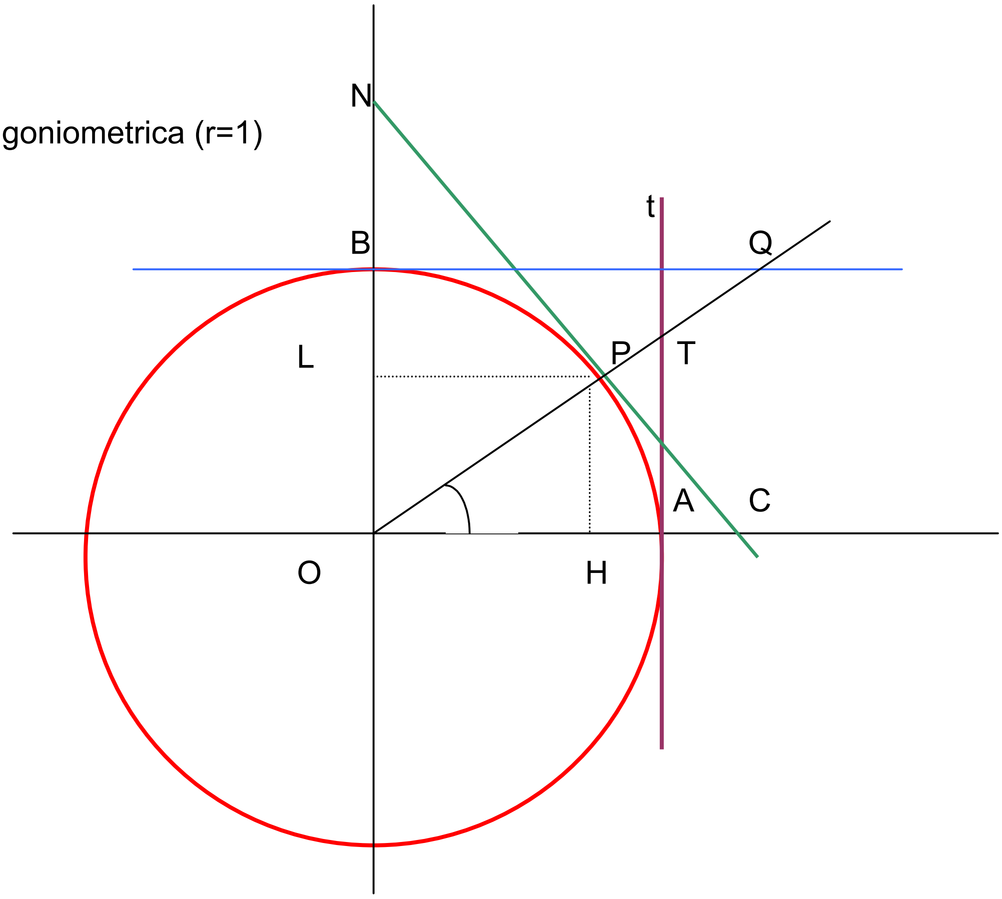
<u>Le funzioni goniometriche</u>

Circonferenza goniometrica (r=1)



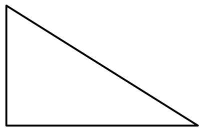
$sen\alpha = \overline{PH}$ $\cos\alpha = \overline{OH}$ $tg\alpha = \overline{AT}$ (vedi i grafici in geometria analitica)

$\csc\alpha = \overline{ON}$ $\sec\alpha = \overline{OC}$ $ctg\,\alpha = \overline{BQ}$ (" " ")

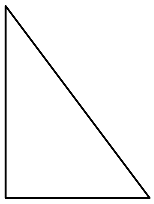
Relazioni tra le funzioni goniometriche

- Dalla similitudine dei triangoli OHP e OAT si ha: $HP : OH = AT : OA \Rightarrow \frac{sen\alpha}{\cos\alpha} = tg\alpha$
- Dai triangoli simili OBQ e OHP si ricava: $BQ : OB = OH : PH \Rightarrow ctg\alpha = \frac{\cos\alpha}{sen\alpha} = \frac{1}{tg\alpha}$
- Per il secondo teorema di Euclide applicato al triangolo rettangolo OPC si ha: $OH : OP = OP : OC \Rightarrow \sec\alpha = \frac{1}{sen\alpha}$
- Per il secondo teorema di Euclide applicato al triangolo rettangolo OPN si ha: $ON : OP = OP : OL \Rightarrow \csc\alpha = \frac{1}{sen\alpha}$
- E' facile osservare inoltre che: $\overline{PH}^2 + \overline{OH}^2 = 1$, quindi: $sen^2\alpha + \cos^2\alpha = 1$

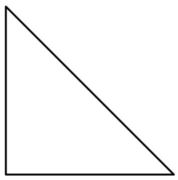
Angoli particolari (*)



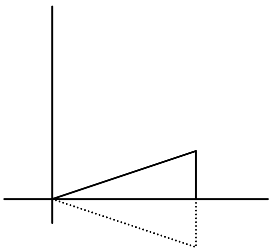
1. $\alpha = \frac{\pi}{6}$ $\quad sen\alpha = \frac{1}{2}$ $\quad \cos\alpha = \frac{\sqrt{3}}{2}$ $\quad tg\alpha = \frac{\sqrt{3}}{3}$



2. $\alpha = \frac{\pi}{3}$ $\quad sen\alpha = \frac{\sqrt{3}}{2}$ $\quad \cos\alpha = \frac{1}{2}$ $\quad tg\alpha = \sqrt{3}$



3. $\alpha = \frac{\pi}{4}$ $\quad sen\alpha = \frac{\sqrt{2}}{2}$ $\quad \cos\alpha = \frac{\sqrt{2}}{2}$ $\quad tg\alpha = 1$



4. $\alpha = \frac{\pi}{10}$ $\quad sen\alpha = \frac{\sqrt{5}-1}{4}$ $\quad \cos\alpha = \frac{\sqrt{10+2\sqrt{5}}}{4}$ $\quad tg\alpha = \sqrt{\frac{5-2\sqrt{5}}{5}}$

(*)visita la pagina ***geometria piana***