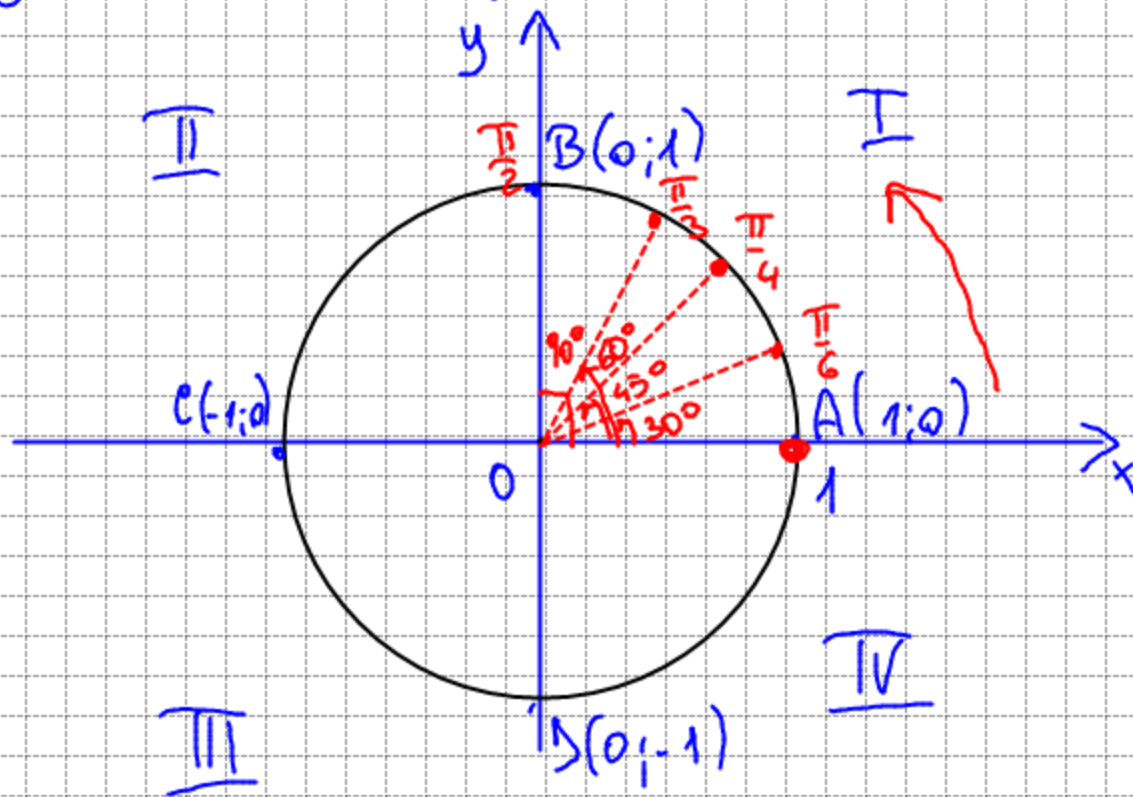


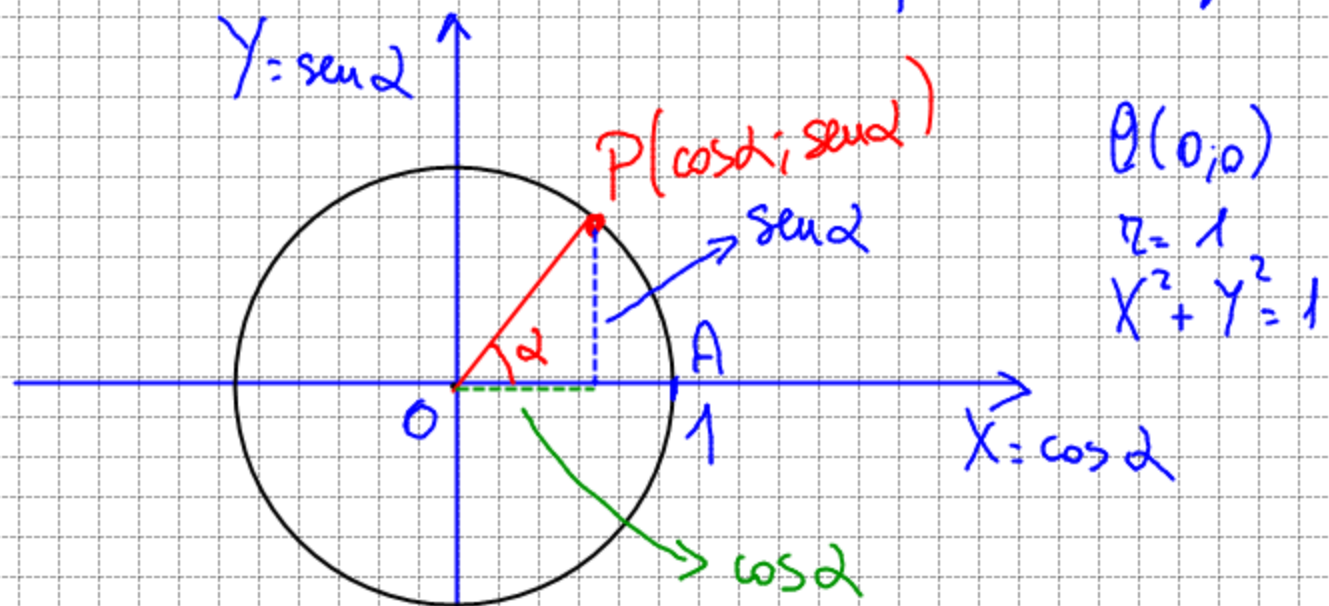
CIRCONFERENZA GONIOMETRICA

Def: Nel piano XOY la circonferenza γ di centro l'origine degli assi $O(O)$ e raggio $r=1$ si chiama circonferenza GONIOMETRICA



SENO E COSENO

Def: Si definiscono **SENO** di α ($\text{sen} \alpha$) e **COSENO** di α ($\text{cos} \alpha$) rispettivamente l'ordinata e l'ascissa del punto $P \in \gamma$:

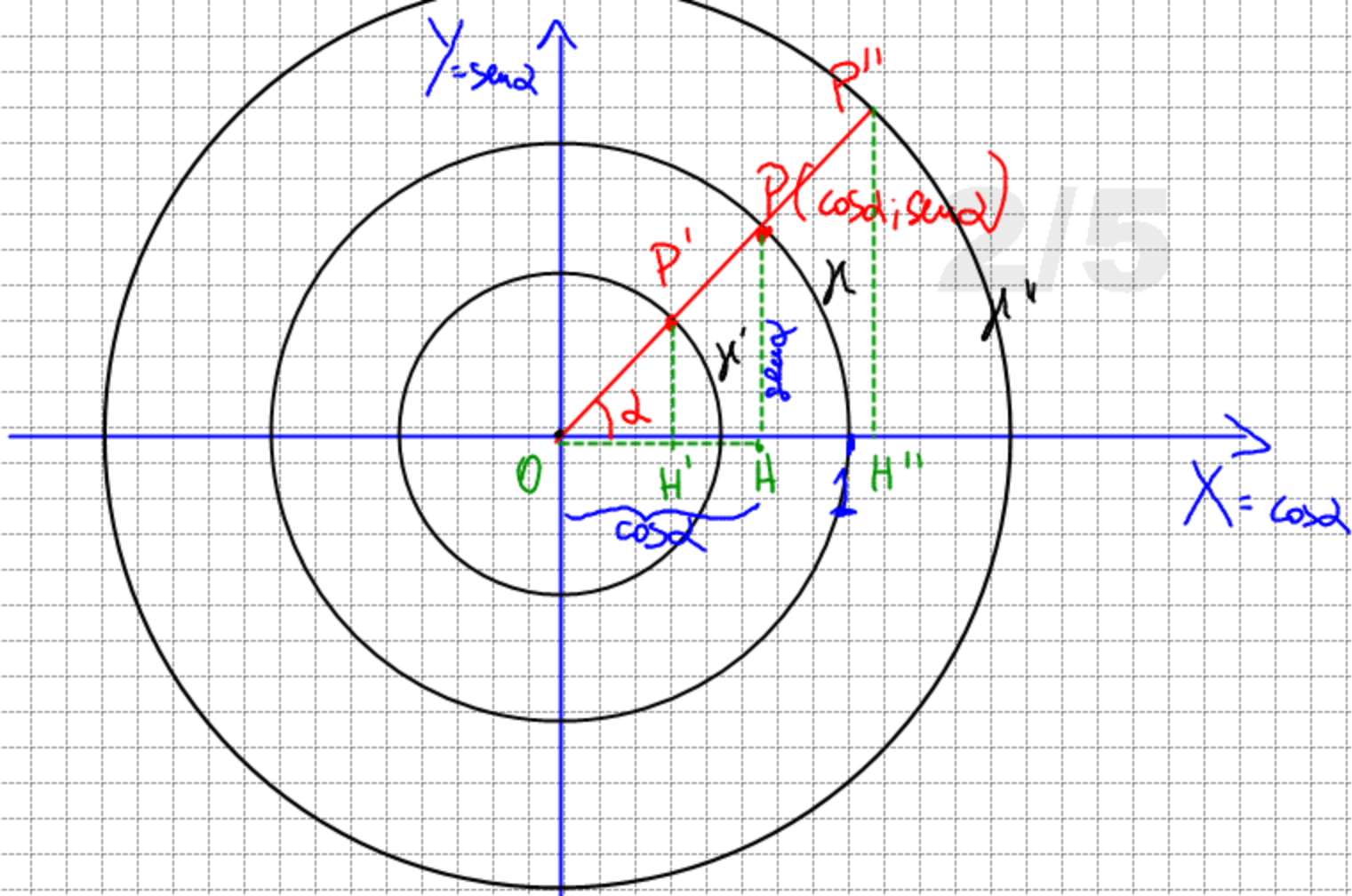


$$-1 \leq \cos \alpha \leq 1$$

$$-1 \leq \text{sen} \alpha \leq 1$$

$$\cos^2 \alpha + \text{sen}^2 \alpha = 1$$

I RELAZIONE
FONDAMENTALE
DELLA GONIOMETRIA



57 I triangoli $\triangle OHP$, $\triangle OH'P'$, $\triangle OH''P''$ sono simili:

$$\overline{H'P'} : \overline{HP} = \overline{OP'} : \overline{OP}$$

$$\frac{\overline{H'P'}}{\overline{OP'}} = \frac{\overline{HP}}{\overline{OP}}$$

$$\frac{\overline{H'P'}}{\overline{OP'}} = \frac{\sin \alpha}{1}$$

$$\sin \alpha = \frac{\overline{H'P'}}{\overline{OP'}}$$

$$\overline{H''P''} : \overline{HP} = \overline{OP''} : \overline{OP}$$

$$\frac{\overline{H''P''}}{\overline{OP''}} = \frac{\overline{HP}}{\overline{OP}}$$

$$\frac{\overline{H''P''}}{\overline{OP''}} = \frac{\sin \alpha}{1}$$

$$\sin \alpha = \frac{\overline{H''P''}}{\overline{OP''}}$$

$$\overline{OH'} : \overline{OH} = \overline{OP'} : \overline{OP}$$

$$\frac{\overline{OH'}}{\overline{OP'}} = \frac{\overline{OH}}{\overline{OP}}$$

$$\frac{\cos \alpha}{1} = \frac{\overline{OH'}}{\overline{OP'}}$$

$$\cos \alpha = \frac{\overline{OH'}}{\overline{OP'}}$$

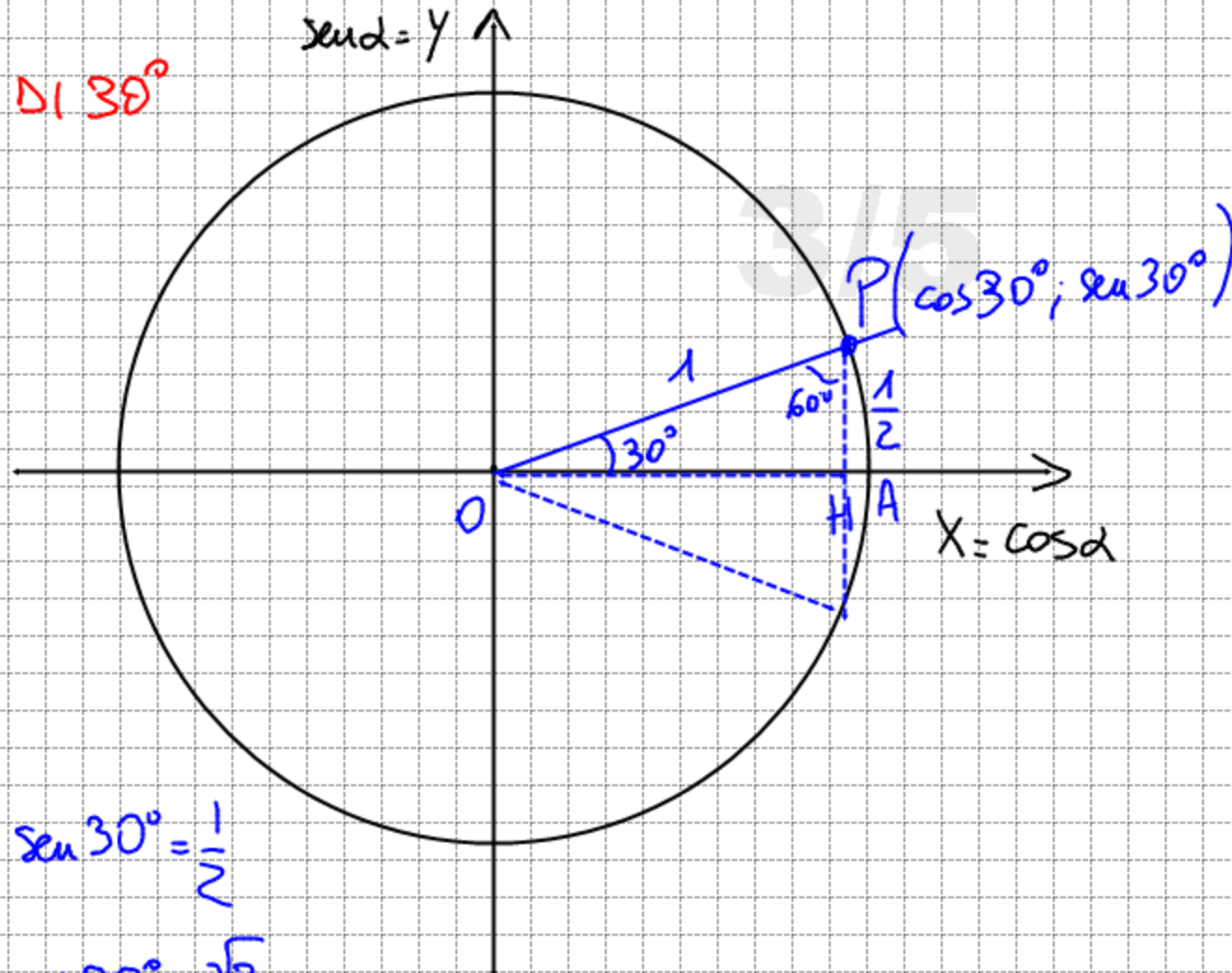
$$\overline{OH''} : \overline{OH} = \overline{OP''} : \overline{OP}$$

$$\frac{\overline{OH''}}{\overline{OP''}} = \frac{\overline{OH}}{\overline{OP}}$$

$$\frac{\cos \alpha}{1} = \frac{\overline{OH''}}{\overline{OP''}}$$

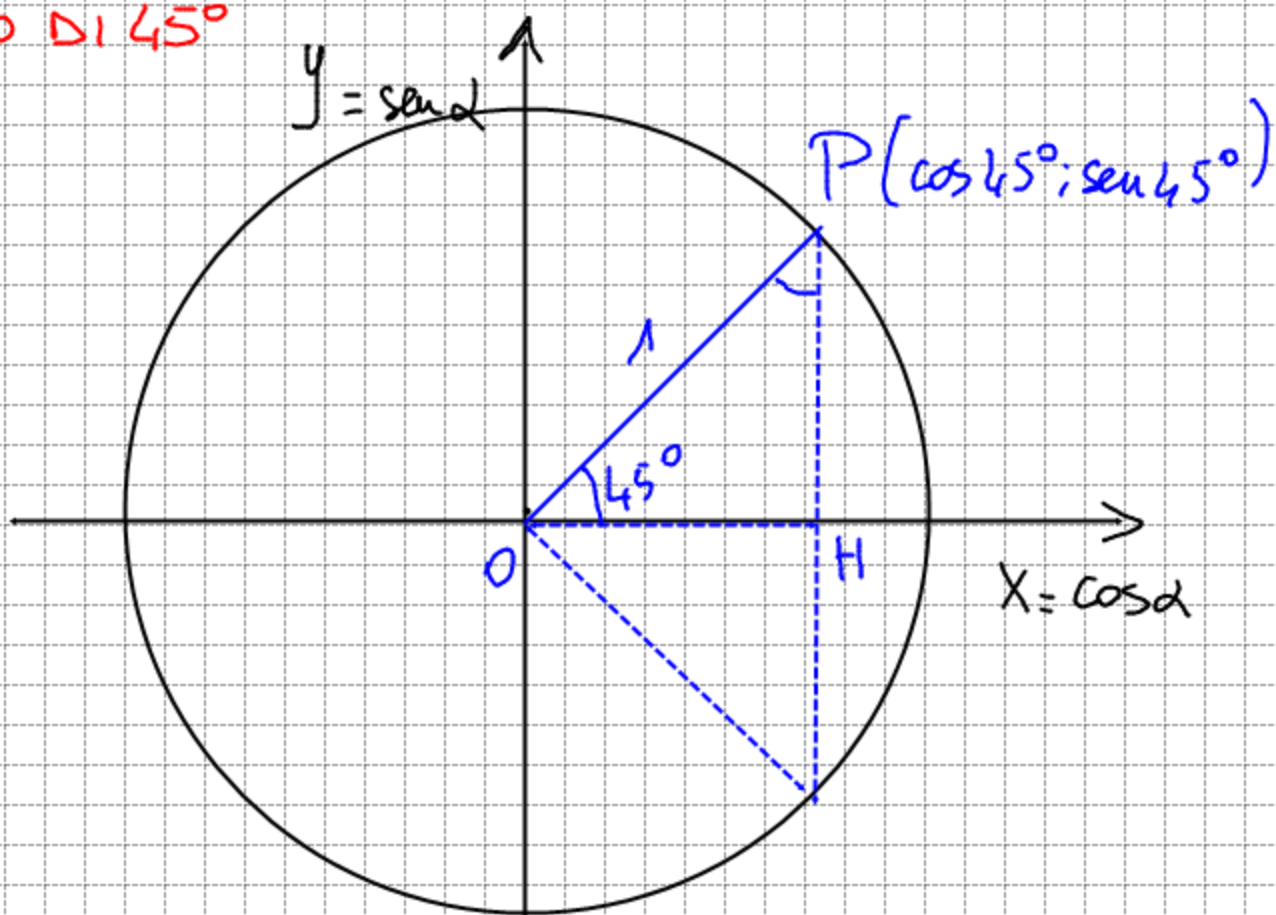
$$\cos \alpha = \frac{\overline{OH''}}{\overline{OP''}}$$

SENO E COSENO DI 30°



$$\overline{PH} = \text{sen} 30^\circ = \frac{1}{2}$$
$$\overline{OH} = \cos 30^\circ = \frac{\sqrt{3}}{2}$$

SENO E COSENO DI 45°

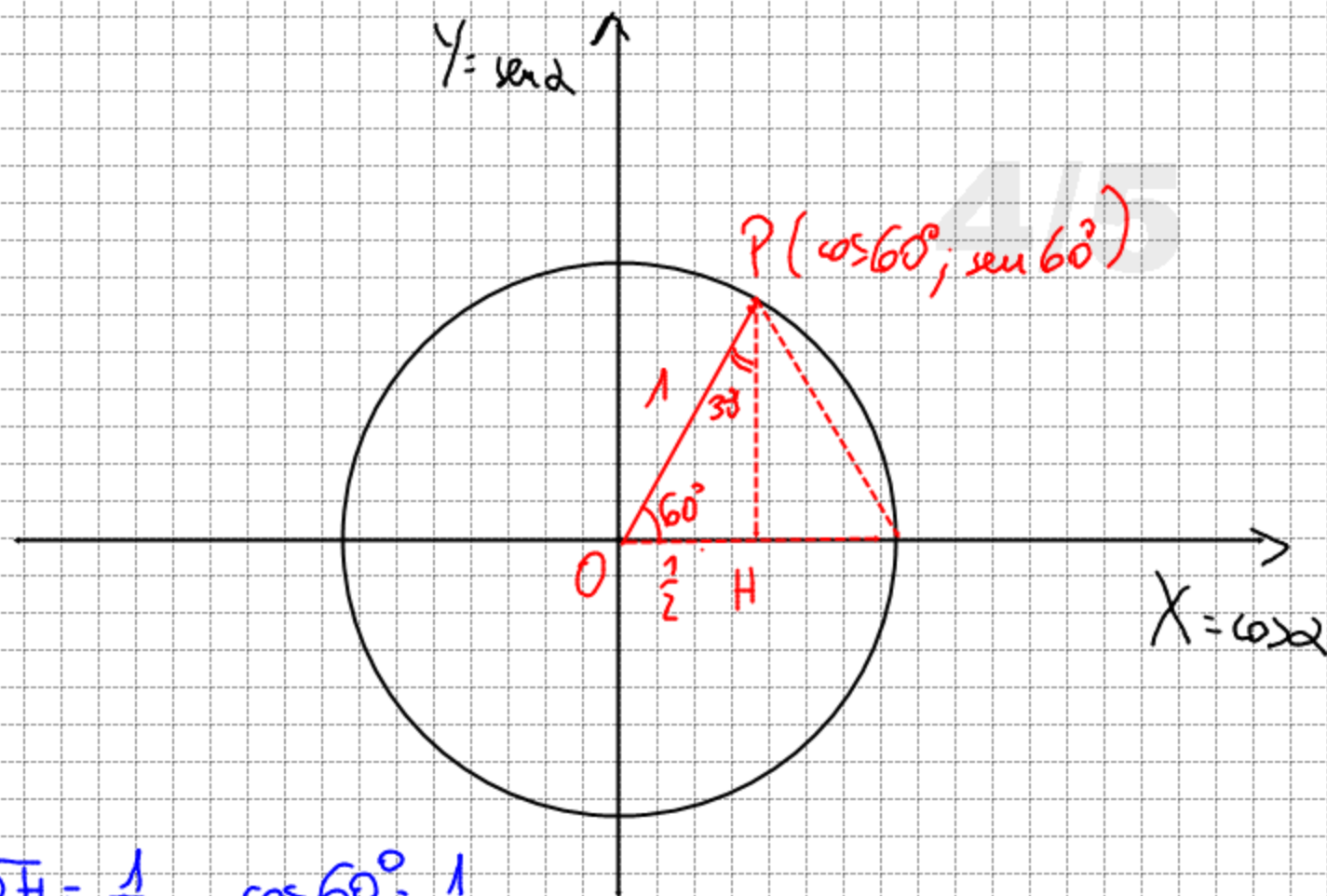


$\triangle OPH$ Triangolo rettangolo isoscele: $\overline{OH} = \overline{HP}$

applico PITAGORA: $l^2 + l^2 = 1 \quad 2l^2 = 1 \quad l = \frac{\sqrt{2}}{2}$

$$\cos \alpha = \frac{\sqrt{2}}{2}$$

$$\text{sen} \alpha = \frac{\sqrt{2}}{2}$$



$$\overline{OH} = \frac{1}{2} \quad \cos 60^\circ = \frac{1}{2}$$

$$\overline{HP} = \frac{\sqrt{3}}{2} \quad \text{sen } 60^\circ = \frac{\sqrt{3}}{2}$$

SENO E COSENO DE $0^\circ; 90^\circ; 180^\circ; 270^\circ; 360^\circ$

A	B	C	D	E
$\cos 0^\circ = 1$	$\cos 90^\circ = 0$	$\cos 180^\circ = -1$	$\cos 270^\circ = 0$	$\cos 360^\circ = 1$
$\text{sen } 0^\circ = 0$	$\text{sen } 90^\circ = 1$	$\text{sen } 180^\circ = 0$	$\text{sen } 270^\circ = -1$	$\text{sen } 360^\circ = 0$

