

Tema 7: TRIGONOMETRÍA

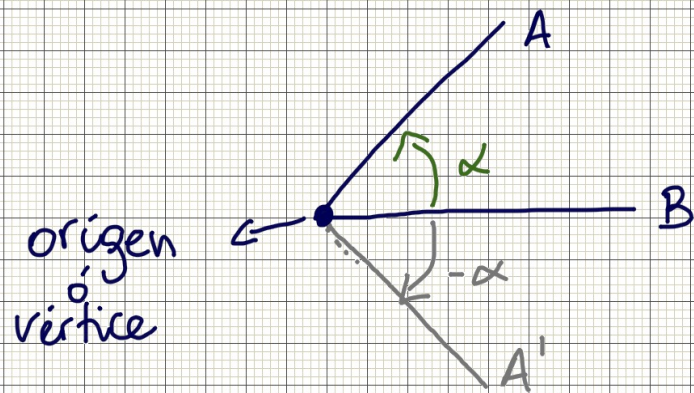
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1. Medidas de un ángulo.
2. Razones trigonométricas de un ángulo.
3. Relaciones entre las razones trigonométricas y signos.
4. Problemas trigonométricos.

Criterios de evaluación:

1.1, 1.2, 1.4, 1.7, 1.8, 1.9, 1.10, 1.11, 1.12,
2.3, 2.4, 3.1

1. Medidas de un ángulo.

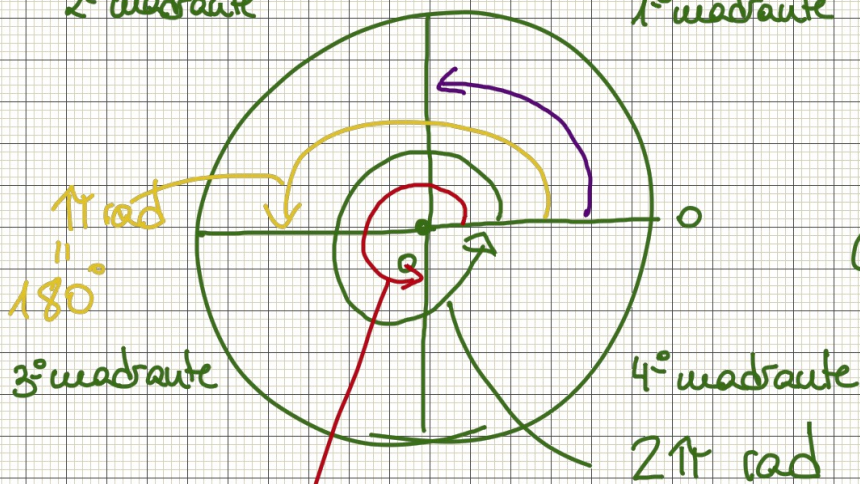


amplitud (α) ó ($-\alpha$)

→ puede venir dada en diferentes medidas:

- (grado, minutos, segundos)
- radianes (rad)

2º cuadrante $\frac{\pi}{2} \text{ rad} = 90^\circ$ 1º cuadrante



circunferencia goniométrica (de radio 1)

$$45^\circ = \underline{\frac{1}{4}\pi} \text{ rad}$$

$$\begin{array}{l} 360^\circ - 2\pi \text{ rad} \\ 45^\circ - x \text{ rad} \end{array} \left| \Rightarrow x = \frac{45 \cdot 2\pi}{360} = \frac{90\pi}{360} = \frac{1}{4}\pi = \frac{\pi}{4}$$

$$80^\circ = \quad \text{rad}$$

$$\left. \begin{array}{l} 180^\circ - \pi \text{ rad} \\ 80^\circ - y \text{ rad} \end{array} \right\} \Rightarrow y = \frac{80 \cdot \pi}{180} = \frac{4}{9}\pi = \frac{4\pi}{9}$$

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$$a) 180^\circ = \pi \text{ rad}$$

$$c) 900^\circ = 5\pi \text{ rad}$$

$$e) 1440^\circ = 8\pi \text{ rad}$$

$$b) 540^\circ = 3\pi \text{ rad}$$

$$d) 1080^\circ = 6\pi \text{ rad}$$

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a) $7\pi \text{ rad} = 1260^\circ$

b) $\frac{1\pi}{6} \text{ rad} = 30^\circ$

c) $\frac{3\pi}{4} \text{ rad} = 135^\circ$

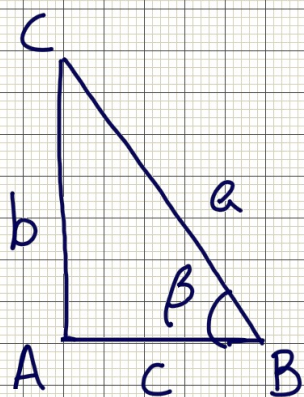
$180^\circ \text{ — } 1\pi \text{ rad}$

$x \text{ — } 7\pi \text{ rad}$

$\hookrightarrow x = \frac{180 \cdot 7\pi}{\pi} = 1260^\circ$

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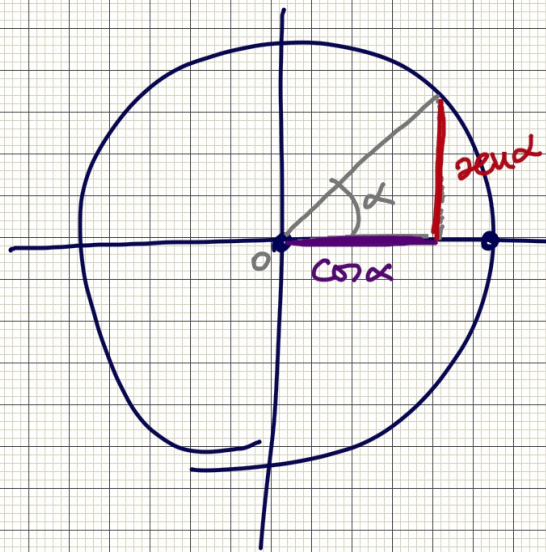
2. Razones trigonométricas de un ángulo.



seno de $\beta \rightarrow \text{sen } \beta = \frac{\text{cateto opuesto}}{\text{hipotenusa}} = \frac{b}{a}$

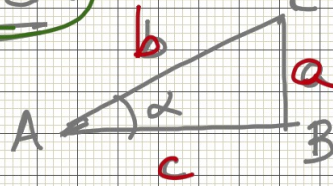
coseno de $\beta \rightarrow \text{cos } \beta = \frac{\text{cateto contiguo}}{\text{hipotenusa}} = \frac{c}{a}$

tangente de $\beta \rightarrow \text{tang } \beta = \frac{\text{cateto opuesto}}{\text{cateto contiguo}} = \frac{b}{c}$



$1^\circ C:$

radio = 1 cm

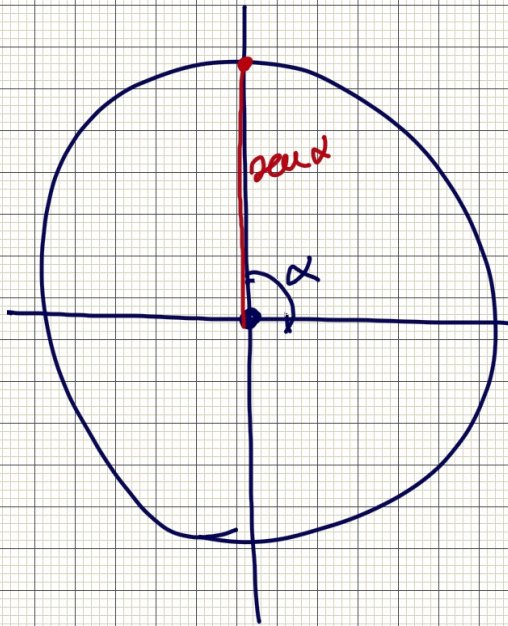


$$\underline{\sin \alpha} = \frac{\text{cat. op}}{\text{hip.}} = \frac{\text{cat op}}{1} = \frac{a}{1}$$

a

$$\underline{\cos \alpha} = \frac{\text{cat. cont.}}{\text{hip.}} = \frac{c}{1} = \underline{c}$$

$$\text{tg } \alpha = \frac{\text{cat op}}{\text{cat cont.}} = \frac{a}{c} = \frac{\sin \alpha}{\cos \alpha}$$

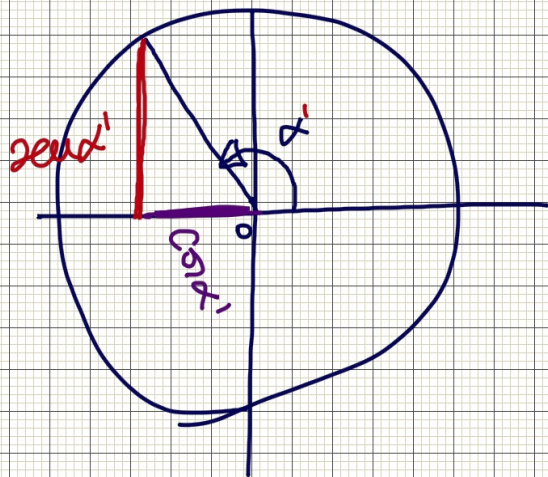


$$\underline{\sin \alpha} = \sin 90^\circ = 1$$

$$\cos \alpha = \cos 90^\circ = 0$$

$$\text{tg } \alpha = \text{tg } 90^\circ = \frac{1}{0} = \text{undefined}$$

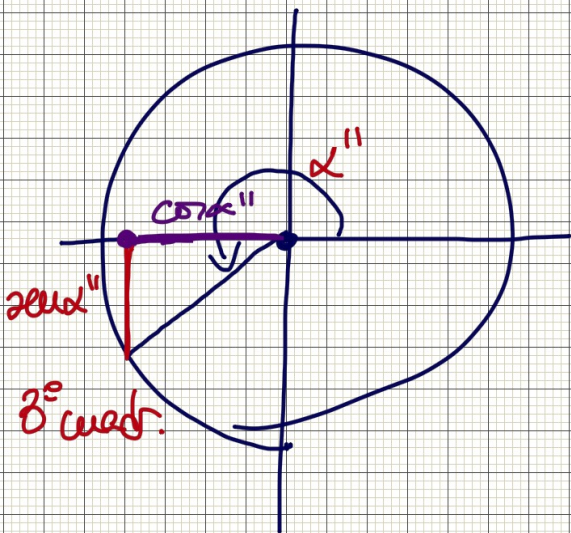
2^o quadrante



$$\text{sen } \alpha' > 0$$

$$\cos \alpha' < 0$$

$$\text{tg } \alpha' = \frac{\text{sen } \alpha'}{\cos \alpha'} = \frac{+}{-} < 0$$

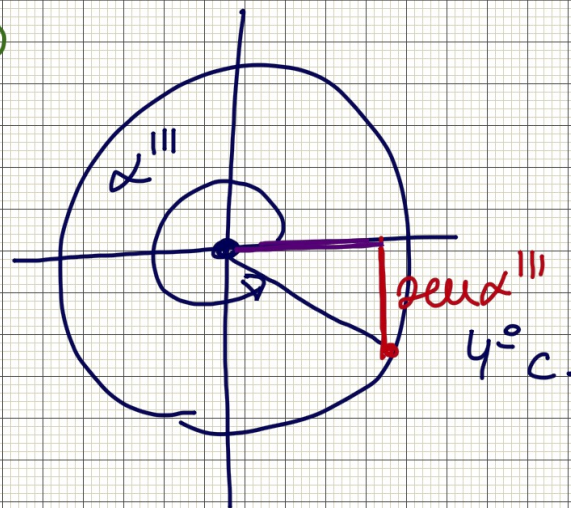


$$\text{sen } \alpha'' < 0$$

$$\cos \alpha'' < 0$$

$$\text{tg } \alpha'' = \frac{\text{sen } \alpha''}{\cos \alpha''} = \frac{-}{-} > 0$$

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$$\text{sen } \alpha''' < 0$$

$$\cos \alpha''' > 0$$

$$\text{tg } \alpha''' = \frac{-}{+} < 0$$

