RESUM

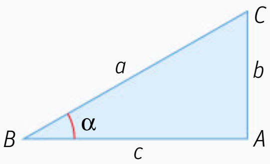
Mesura d'angles

- **Grau sexagesimal:** mesura de l'angle que s'obté en dividir el cercle complet entre 360.
- **Radian:** és l'angle central d'una circumferència en el qual coincideixen el radi i la longitud de l'arc. $360° = 2\pi$ rad $180° = \pi$ rad

Raons trigonomètriques d'un angle agut

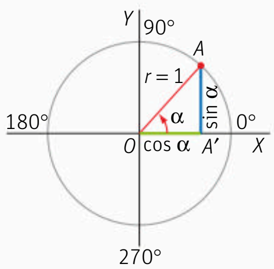
$$\sin\alpha = \frac{b}{a} \qquad \cos\alpha = \frac{c}{a} \qquad \text{tg}\,\alpha = \frac{b}{c}$$

$$\text{cosec}\,\alpha = \frac{1}{\sin\alpha} = \frac{a}{b} \qquad \sec\alpha = \frac{1}{\cos\alpha} = \frac{a}{c} \qquad \text{cotg}\,\alpha = \frac{1}{\text{tg}\,\alpha} = \frac{c}{b}$$

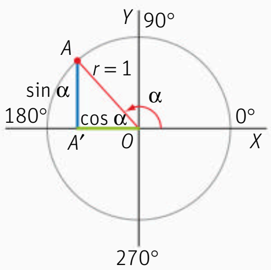


Raons trigonomètriques d'un angle qualsevol

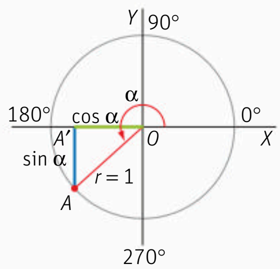
Primer quadrant



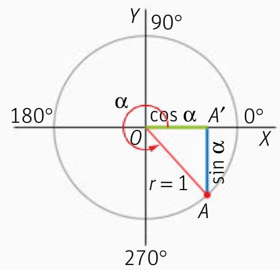
Segon quadrant



Tercer quadrant



Quart quadrant



Reducció al primer quadrant de les raons trigonomètriques

$\sin(90°-\alpha) = \cos\alpha$	$\sin(180°-\alpha) = \sin\alpha$	$\sin(180°+\alpha) = -\sin\alpha$	$\sin(360°-\alpha) = \sin(-\alpha) = -\sin\alpha$
$\cos(90°-\alpha) = \sin\alpha$	$\cos(180°-\alpha) = -\cos\alpha$	$\cos(180°+\alpha) = -\cos\alpha$	$\cos(360°-\alpha) = \cos(-\alpha) = \cos\alpha$
$\text{tg}(90°-\alpha) = \text{cotg}\,\alpha$	$\text{tg}(180°-\alpha) = -\text{tg}\,\alpha$	$\text{tg}(180°+\alpha) = \text{tg}\,\alpha$	$\text{tg}(360°-\alpha) = \text{tg}(-\alpha) = -\text{tg}\,\alpha$

Relacions entre les raons trigonomètriques

$$\sin^2\alpha + \cos^2\alpha = 1 \qquad \text{tg}\,\alpha = \frac{\sin\alpha}{\cos\alpha} \qquad 1 + \text{tg}^2\alpha = \frac{1}{\cos^2\alpha}$$

Suma i diferència d'angles

$$\sin(\alpha \pm \beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$$

$$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$$

$$\text{tg}(\alpha \pm \beta) = \frac{\text{tg}\,\alpha \pm \text{tg}\,\beta}{1 \mp \text{tg}\,\alpha\,\text{tg}\,\beta}$$

Angle doble

$$\sin 2\alpha = 2\sin\alpha\cos\alpha \qquad \text{tg}\,2\alpha = \frac{2\,\text{tg}\,\alpha}{1-\text{tg}^2\alpha}$$

$$\cos 2\alpha = \cos^2\alpha - \sin^2\alpha$$

Angle meitat

$$\sin\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{2}} \qquad \cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$$

$$\text{tg}\,\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$$

Resolució de triangles

Teorema del sinus $\dfrac{a}{\sin\hat{A}} = \dfrac{b}{\sin\hat{B}} = \dfrac{c}{\sin\hat{C}}$

Teorema del cosinus
$$a^2 = b^2 + c^2 - 2bc\cos\hat{A}$$
$$b^2 = a^2 + c^2 - 2ac\cos\hat{B}$$
$$c^2 = a^2 + b^2 - 2ab\cos\hat{C}$$

Tipus de situacions

- Donats dos angles i un costat
- Donats dos costats i l›angle comprès
- Donats dos costats i un angle no comprès
- Donats els tres costats