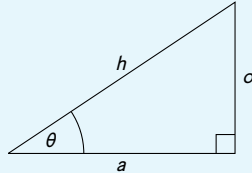


# Fórmulas de Trigonometría

## Razones trigonométricas en un triángulo rectángulo



**Seno**  $\text{sen}(\theta) = \frac{o}{h}$ .

**Coseno**  $\text{cos}(\theta) = \frac{a}{h}$ .

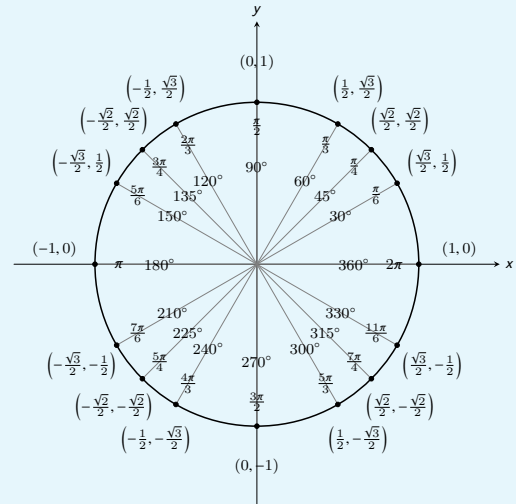
**Tangente**  $\text{tg}(\theta) = \frac{o}{a} = \frac{\text{sen}(\theta)}{\text{cos}(\theta)}$ .

**Secante**  $\text{sec}(\theta) = \frac{h}{a} = \frac{1}{\text{cos}(\theta)}$ .

**Cosecante**  $\text{cosec}(\theta) = \frac{h}{o} = \frac{1}{\text{sen}(\theta)}$ .

**Cotangente**  $\text{ctg}(\theta) = \frac{a}{o} = \frac{\text{cos}(\theta)}{\text{sen}(\theta)} = \frac{1}{\text{tg}(\theta)}$ .

## Razones trigonométricas de los principales ángulos

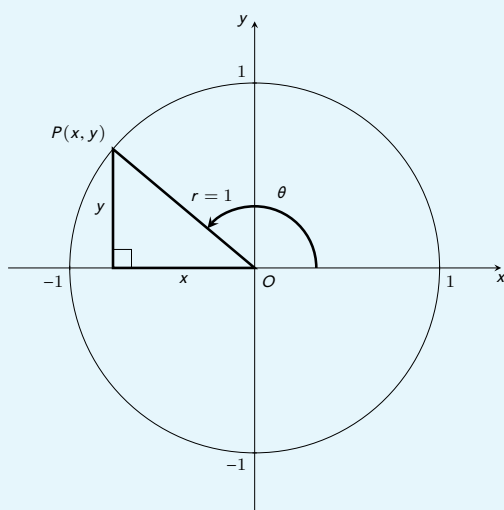


## Conversión de ángulos

**Grados a radianes**  $y = \frac{\pi \text{ rad}}{180^\circ} x$ .

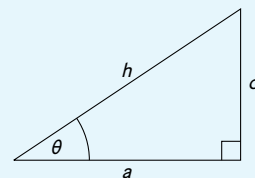
**Radianes a grados**  $y = \frac{180^\circ}{\pi \text{ rad}} x$ .

## Razones trigonométricas en el círculo unitario



$\text{cos}(\theta) = x \quad \text{sen}(\theta) = y \quad \text{tg}(\theta) = \frac{y}{x}$

## Teorema de pitágoras



$$a^2 + o^2 = h^2$$

$$\text{sen}(\theta)^2 + \text{cos}(\theta)^2 = 1$$

$$1 + \text{tg}(\theta)^2 = \text{sec}(\theta)^2$$

$$1 + \text{ctg}(\theta)^2 = \text{cosec}(\theta)^2$$

## Razones trigonométricas de sumas de ángulos

$$\text{sen } \alpha + \beta = \text{sen}(\alpha) \text{cos}(\beta) + \text{cos}(\alpha) \text{sen}(\beta)$$

$$\text{sen } \alpha - \beta = \text{sen}(\alpha) \text{cos}(\beta) - \text{cos}(\alpha) \text{sen}(\beta)$$

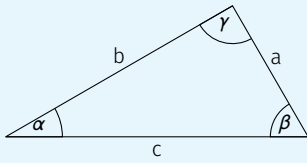
$$\text{cos } \alpha + \beta = \text{cos}(\alpha) \text{cos}(\beta) - \text{sen}(\alpha) \text{sen}(\beta)$$

$$\text{cos } \alpha - \beta = \text{cos}(\alpha) \text{cos}(\beta) + \text{sen}(\alpha) \text{sen}(\beta)$$

$$\text{sen}(2\theta) = 2 \text{sen}(\theta) \text{cos}(\theta)$$

$$\text{cos}(2\theta) = \text{cos}(\theta)^2 - \text{sen}(\theta)^2$$

## Teoremas de los senos y los cosenos



### Teorema de los senos

$$\frac{a}{\text{sen}(\alpha)} = \frac{b}{\text{sen}(\beta)} = \frac{c}{\text{sen}(\gamma)}$$

### Teorema de los cosenos

$$a^2 = b^2 + c^2 - 2bc \cos(\alpha)$$

$$b^2 = a^2 + c^2 - 2ac \cos(\beta)$$

$$c^2 = a^2 + b^2 - 2ab \cos(\gamma)$$