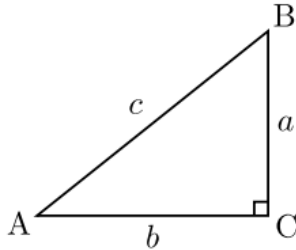


## Formulario de Trigonometría

### Ley de Senos



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

### Ley de Cosenos

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

### Identidades Pitagóricas

$$\cos^2 x + \sin^2 x = 1$$

$$\sec^2 x - \tan^2 x = 1$$

$$\csc^2 x - \cot^2 x = 1$$

$$\sin x = \pm \sqrt{1 - \cos^2 x}$$

$$\cos x = \pm \sqrt{1 - \sin^2 x}$$

### Diferencia de Cuadrados a Producto

$$\sin^2(x) - \sin^2(y) = \sin(x+y) \sin(x-y)$$

$$\cos^2(x) - \cos^2(y) = \cos(x+y) \cos(x-y)$$

### Suma y Diferencia de Ángulos

$$\sin(x \pm y) = \sin x \cos y \pm \cos x \sin y$$

$$\cos(x \pm y) = \cos x \cos y \mp \sin x \sin y$$

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$$

$$\csc(x \pm y) = \frac{1}{\sin(x \pm y)}$$

$$\sec(x \pm y) = \frac{1}{\cos(x \pm y)}$$

$$\cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$$

### Suma a Producto

$$\sin x \pm \sin y = 2 \sin \left( \frac{x \pm y}{2} \right) \cos \left( \frac{x \mp y}{2} \right)$$

$$\cos x + \cos y = 2 \cos \left( \frac{x+y}{2} \right) \cos \left( \frac{x-y}{2} \right)$$

$$\cos x - \cos y = -2 \sin \left( \frac{x+y}{2} \right) \sin \left( \frac{x-y}{2} \right)$$

$$\tan x \pm \tan y = \frac{\sin(x \pm y)}{\cos x \cos y}$$

### Identidades de Ángulo Doble

$$\sin 2x = \frac{2 \tan x}{1 + \tan^2 x} = 2 \sin x \cos x$$

$$\cos 2x = \frac{1 - \tan^2 x}{1 + \tan^2 x} = \cos^2 x - \sin^2 x$$

$$= 2 \cos^2 x - 1 = 1 - 2 \sin^2 x$$

$$\tan 2x = \frac{2 \tan x}{1 - \tan^2 x}$$

$$\cot 2x = \frac{\cot^2 x - 1}{2 \cot x}$$