Relaciones básicas

$$\operatorname{sen}^2 x+\cos^2 x=1, \qquad 1+\tan^2 x=\frac{1}{\cos^2 x}, \qquad \tan x=\frac{\operatorname{sen} x}{\cos x}$$

$$\sec x=\frac{1}{\cos x}, \qquad \operatorname{cosec} x=\frac{1}{\operatorname{sen} x}, \qquad \cot x=\frac{\cos x}{\operatorname{sen} x}=\frac{1}{\tan x}$$

Ángulo doble

$$\operatorname{sen} 2x=2\operatorname{sen} x\cos x, \qquad \cos 2x=\cos^2 x-\operatorname{sen}^2 x, \qquad \tan 2x=\frac{2\tan x}{1-\tan^2 x}$$

Ángulo mitad

$$\operatorname{sen}\frac{x}{2}=\pm\sqrt{\frac{1-\cos x}{2}}, \qquad \cos\frac{x}{2}=\pm\sqrt{\frac{1+\cos x}{2}}, \qquad \tan\frac{x}{2}=\pm\sqrt{\frac{1-\cos x}{1+\cos x}}$$

Suma-resta de ángulos

$$\operatorname{sen}(a+b)=\operatorname{sen} a\cos b+\cos a\operatorname{sen} b$$

$$\operatorname{sen}(a-b)=\operatorname{sen} a\cos b-\cos a\operatorname{sen} b$$

$$\cos(a+b)=\cos a\cos b-\operatorname{sen} a\operatorname{sen} b$$

$$\cos(a-b)=\cos a\cos b+\operatorname{sen} a\operatorname{sen} b$$

$$\tan(a+b)=\frac{\tan a+\tan b}{1-\tan a\cdot\tan b} \qquad \tan(a-b)=\frac{\tan a-\tan b}{1+\tan a\cdot\tan b}$$

Suma-resta de función trigonométrica

$$\operatorname{sen} a+\operatorname{sen} b=2\operatorname{sen}\frac{a+b}{2}\cos\frac{a-b}{2}$$

$$\cos a+\cos b=2\cos\frac{a+b}{2}\cos\frac{a-b}{2}$$

$$\operatorname{sen} a-\operatorname{sen} b=2\cos\frac{a+b}{2}\operatorname{sen}\frac{a-b}{2}$$

$$\cos a-\cos b=-2\operatorname{sen}\frac{a+b}{2}\operatorname{sen}\frac{a-b}{2}$$

Fórmulas para triángulos

Teorema del seno

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

Teorema de los cosenos

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

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

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

Suma de los ángulos

$$A+B+C=180^\circ$$