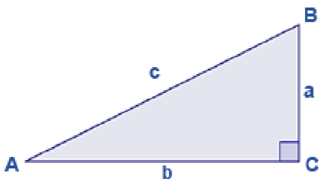
Trigonometría

Funciones trigonométricas

$$\operatorname{sen} A = \frac{a}{c} \qquad \csc A = \frac{1}{\operatorname{sen} A} = \frac{c}{a}$$

$$\cos A = \frac{b}{c} \qquad \sec A = \frac{1}{\cos A} = \frac{c}{b}$$

$$\tan A = \frac{a}{b} \qquad \cot A = \frac{1}{\tan A} = \frac{b}{a}$$



Otras relaciones trigonométricas

$$\operatorname{sen}^2\alpha + \cos^2\alpha = 1 \qquad 1 + \cot^2\alpha = \csc^2\alpha \qquad 1 + \tan^2\alpha = \sec^2\alpha$$

Teorema del seno

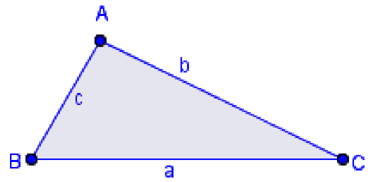
$$\frac{a}{\operatorname{sen}A} = \frac{b}{\operatorname{sen}B} = \frac{c}{\operatorname{sen}C}$$

Teorema del coseno

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

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

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



Suma de ángulos

$$\widehat{A} + \widehat{B} + \widehat{C} = 180^\circ$$

Suma y resta de ángulos

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

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

$$\tan(\alpha+\beta) = \frac{\tan\alpha + \tan\beta}{1 - \tan\alpha\tan\beta} \qquad \tan(\alpha-\beta) = \frac{\tan\alpha - \tan\beta}{1 + \tan\alpha\tan\beta}$$

Ángulo doble

$$\operatorname{sen}(2\alpha) = 2\operatorname{sen}\alpha\cos\alpha$$

$$\cos(2\alpha) = \cos^2\alpha - \operatorname{sen}^2\alpha = 2\cos^2\alpha - 1 = 1 - 2\operatorname{sen}^2\alpha$$

$$\tan(2\alpha) = \frac{2\tan\alpha}{1 - \tan^2\alpha}$$

Ángulo triple

$$\operatorname{sen}(3\alpha) = 3\operatorname{sen}\alpha - 4\operatorname{sen}^3\alpha$$

$$\cos(3\alpha) = 4\cos^3\alpha - 3\cos\alpha$$

$$\tan(3\alpha) = \frac{3\tan\alpha - \tan^3\alpha}{1 - 3\tan^2\alpha}$$

Ángulo mitad

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

Transformaciones de sumas y diferencias en productos

$$\operatorname{sen}A + \operatorname{sen}B = 2\operatorname{sen}\frac{1}{2}(A+B)\cdot\cos\frac{1}{2}(A-B)$$

$$\operatorname{sen}A - \operatorname{sen}B = 2\cos\frac{1}{2}(A+B)\cdot\operatorname{sen}\frac{1}{2}(A-B)$$

$$\cos A + \cos B = 2\cos\frac{1}{2}(A+B)\cdot\cos\frac{1}{2}(A-B)$$

$$\cos A - \cos B = -2\operatorname{sen}\frac{1}{2}(A+B)\cdot\operatorname{sen}\frac{1}{2}(A-B)$$