

ÁNGULO MITAD

$$\sin\left(\frac{A}{2}\right) = \pm\sqrt{\frac{1 - \cos A}{2}}$$
$$\cos\left(\frac{A}{2}\right) = \pm\sqrt{\frac{1 + \cos A}{2}}$$
$$\tan\left(\frac{A}{2}\right) = \pm\sqrt{\frac{1 - \cos A}{1 + \cos A}}$$

ÁNGULO DOBLE

$$\sin(2A) = 2 \sin A \cdot \cos B$$
$$\cos(2A) = \cos^2 A - \sin^2 A$$
$$\tan(2A) = \frac{2 \tan A}{1 - \tan^2 A}$$

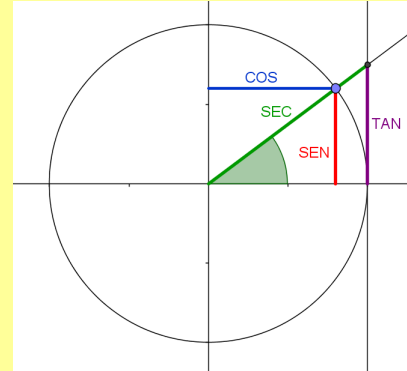
RESTA DE ÁNGULOS

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

TRANSFORMACIÓN SUMAS-PRODUCTOS

$$\sin A + \sin B = 2 \sin \frac{A+B}{2} \cdot \cos \frac{A-B}{2}$$
$$\sin A - \sin B = 2 \cos \frac{A+B}{2} \cdot \sin \frac{A-B}{2}$$
$$\cos A + \cos B = 2 \cos \frac{A+B}{2} \cdot \cos \frac{A-B}{2}$$
$$\cos A - \cos B = -2 \sin \frac{A+B}{2} \cdot \sin \frac{A-B}{2}$$

DEFINICIÓN DE LAS RAZONES TRIGONOMÉTRICAS



SUMA DE ÁNGULOS

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

RESOLUCIÓN DE TRIÁNGULOS

TEOREMA DEL SENO

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

TEOREMA DEL COSENO

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

ECUACIÓN FUNDAMENTAL Y OTRAS RELACIONES

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

RELACIONES ENTRE CUADRANTES

$$\sin(\alpha) = \sin(180 - \alpha)$$
$$\cos(\alpha) = \cos(360 - \alpha)$$
$$\tan(\alpha) = \tan(\alpha + 180)$$