

TRIGONOMETRÍA

$$\text{sen}^2 x + \text{cos}^2 x = 1$$

Ángulo doble:

$$\text{sen } 2x = 2 \text{ sen } x \cdot \text{cos } x$$

$$\text{cos } 2x = \text{cos}^2 x - \text{sen}^2 x$$

$$\text{tg } 2x = \frac{2 \text{ tg } x}{1 - \text{tg}^2 x}$$

Ángulo mitad:

$$\text{sen } \frac{x}{2} = \sqrt{\frac{1 - \text{cos } x}{2}}$$

$$\text{cos } \frac{x}{2} = \sqrt{\frac{1 + \text{cos } x}{2}}$$

$$\text{tg } \frac{x}{2} = \sqrt{\frac{1 - \text{cos } x}{1 + \text{cos } x}}$$

Suma de ángulos:

$$\text{cos}(x + y) = \text{cos } x \cdot \text{cos } y - \text{sen } x \cdot \text{sen } y$$

$$\text{sen}(x + y) = \text{cos } x \cdot \text{sen } y + \text{sen } x \cdot \text{cos } y$$

$$\text{tg}(x + y) = \frac{\text{tg } x + \text{tg } y}{1 - \text{tg } x \cdot \text{tg } y}$$

Resta de ángulos:

$$\text{cos}(x - y) = \text{cos } x \cdot \text{cos } y + \text{sen } x \cdot \text{sen } y$$

$$\text{sen}(x - y) = \text{sen } x \cdot \text{cos } y - \text{cos } x \cdot \text{sen } y$$

$$\text{tg}(x - y) = \frac{\text{tg } x - \text{tg } y}{1 + \text{tg } x \cdot \text{tg } y}$$

Transformación de sumas en productos:

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

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

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

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

$$\frac{\operatorname{sen} x + \operatorname{sen} y}{\operatorname{sen} x - \operatorname{sen} y} = \frac{\operatorname{tg}\left(\frac{x+y}{2}\right)}{\operatorname{tg}\left(\frac{x-y}{2}\right)}$$

$$\operatorname{tg} x \pm \operatorname{tg} y = \frac{\operatorname{sen}(x \pm y)}{\cos x \cdot \cos y}$$

Teorema del seno:

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

Teorema del coseno:

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

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

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