

Relaciones trigonométricas

$$\operatorname{sen} \alpha = \frac{y}{r}$$

$$\operatorname{cos} \alpha = \frac{x}{r}$$

$$\operatorname{tg} \alpha = \frac{y}{x}$$

$$\operatorname{ctg} \alpha = \frac{x}{y}$$

$$\operatorname{cosec} \alpha = \frac{r}{y}$$

$$\operatorname{sec} \alpha = \frac{r}{x}$$

$$\operatorname{tg} \alpha = \frac{\operatorname{sen} \alpha}{\operatorname{cos} \alpha}$$

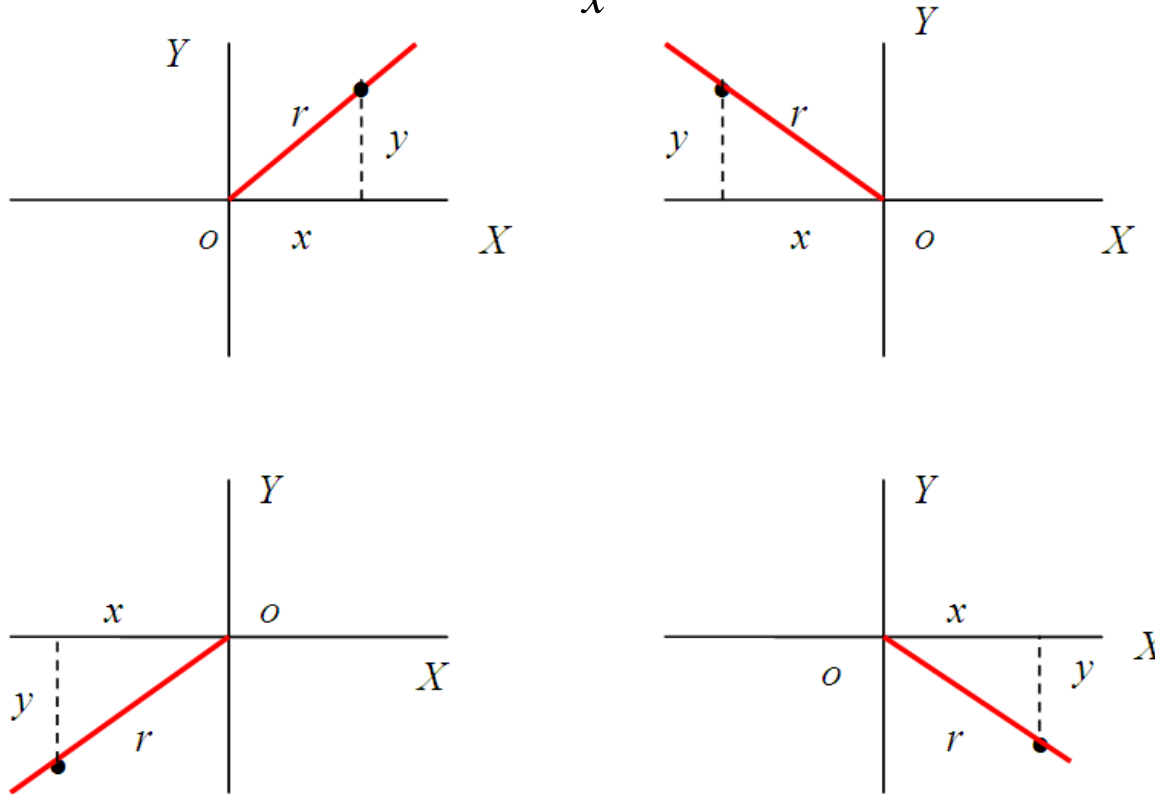


Fig. Graficas de las Funciones Trigonometricas

Identidades trigonométricas

$$\operatorname{sen}(\alpha \pm \beta) = \operatorname{sen} \alpha \cos \beta \pm \cos \alpha \operatorname{sen} \beta$$

$$\cos(\alpha \pm \beta) = \cos \alpha \cos \beta \mp \operatorname{sen} \alpha \operatorname{sen} \beta$$

$$\operatorname{sen} \alpha \pm \operatorname{sen} \beta = 2 \operatorname{sen} \frac{1}{2}(\alpha \pm \beta) \cos \frac{1}{2}(\alpha \mp \beta)$$

$$\cos \alpha + \cos \beta = 2 \cos \frac{1}{2}(\alpha + \beta) \cos \frac{1}{2}(\alpha - \beta)$$

$$\cos \alpha - \cos \beta = -2 \operatorname{sen} \frac{1}{2}(\alpha + \beta) \operatorname{sen} \frac{1}{2}(\alpha - \beta)$$

$$\operatorname{sen} \alpha \operatorname{sen} \beta = \frac{1}{2} [\cos(\alpha - \beta) - \cos(\alpha + \beta)]$$

$$\cos \alpha \cos \beta = \frac{1}{2} [\cos(\alpha - \beta) + \cos(\alpha + \beta)]$$

$$\operatorname{sen} \alpha \cos \beta = \frac{1}{2} [\operatorname{sen}(\alpha - \beta) + \operatorname{sen}(\alpha + \beta)]$$

$$\text{sen}2\alpha = 2\text{sen}\alpha \cos\alpha$$

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

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

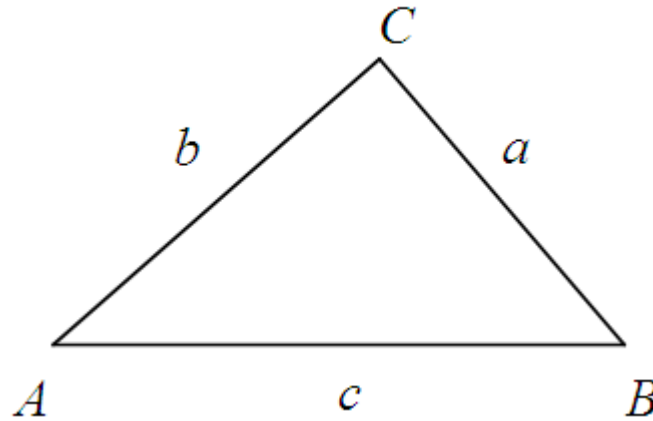
$$\cos^2 \frac{1}{2}\alpha = \frac{1}{2}(1 + \cos \alpha)$$

Ley de los senos

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

Ley de los cosenos

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



Productos notables

Cuadrado de un binomio

$$(a + b)^2 = (a + b)(a + b) = a^2 + 2ab + b^2$$

$$(a - b)^2 = (a - b)(a - b) = a^2 - 2ab + b^2$$

Cubo de un binomio

$$(a + b)^3 = (a + b)^2(a + b) = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a - b)^3 = (a - b)^2(a - b) = a^3 - 3a^2b + 3ab^2 - b^3$$

Suma por la diferencia de dos términos

$$(a + b)(a - b) = a^2 - b^2$$

Factorización

Diferencia de dos cuadrados perfectos

$$a^2 - b^2 = (a + b)(a - b)$$

Factorización de una suma o diferencia de cubos

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$