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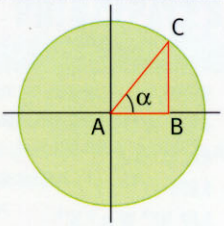
TRIGONOMETRÍA BÁSICA

RAZONES TRIGONOMÉTRICAS

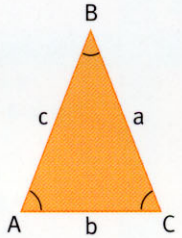


$$\operatorname{sen}\alpha = \frac{BC}{AC} \qquad \operatorname{cosec}\alpha = \frac{1}{\operatorname{sen}\alpha}$$

$$\cos\alpha = \frac{AB}{AC} \qquad \sec\alpha = \frac{1}{\cos\alpha}$$

$$\operatorname{tg}\alpha = \frac{BC}{AB} \qquad \operatorname{cotg}\alpha = \frac{\cos\alpha}{\operatorname{sen}\alpha}$$

APLICACIONES TRIGONOMÉTRICAS



- **TEOREMA DE LOS SENOS**

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

- **TEOREMA DEL COSENO**

$$a^2 = b^2 + c^2 - 2bc\cos\hat{A}$$
$$b^2 = a^2 + c^2 - 2ac\cos\hat{B}$$
$$c^2 = a^2 + b^2 - 2ab\cos\hat{C}$$

RELACIÓN ENTRE RAZONES TRIGONOMÉTRICAS

- **DE UN MISMO ÁNGULO**

$$\operatorname{sen}^2\alpha + \cos^2\alpha = 1 \qquad \sec^2\alpha - \operatorname{tg}^2\alpha = 1$$
$$\operatorname{cosec}^2\alpha - \operatorname{cotg}^2\alpha = 1 \qquad \operatorname{tg}\alpha = \frac{\operatorname{sen}\alpha}{\cos\alpha}$$

- **DE ÁNGULOS DISTINTOS**

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

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

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

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

RAZONES DE APLICACIONES CON ÁNGULOS

- **SUMA Y DIFERENCIA**

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

- **ÁNGULO DOBLE**

$$\operatorname{sen} 2\alpha = 2\operatorname{sen}\alpha\cos\alpha$$
$$\cos 2\alpha = \cos^2\alpha - \operatorname{sen}^2\alpha \qquad \operatorname{tg} 2\alpha = \frac{2\operatorname{tg}\alpha}{1 - \operatorname{tg}^2\alpha}$$

- **ÁNGULO MITAD**

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

$$\cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$$

Extraído de: Física 2º Bachillerato, Ed. SM, 2000