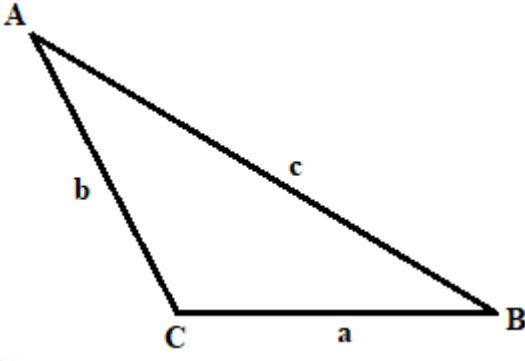


## FÓRMULAS TRIGONOMÉTRICAS II

<p><b>Teorema del seno:</b></p> $\frac{a}{\operatorname{sen}\hat{A}} = \frac{b}{\operatorname{sen}\hat{B}} = \frac{c}{\operatorname{sen}\hat{C}}$	
<p><b>Teorema del coseno:</b></p> $a^2 = b^2 + c^2 - 2bc \cos\hat{A}$ $b^2 = a^2 + c^2 - 2ac \cos\hat{B}$ $c^2 = a^2 + b^2 - 2ab \cos\hat{C}$	
$\operatorname{sen}^2\alpha + \operatorname{cos}^2\alpha = 1$ $1 + \operatorname{tg}^2\alpha = \frac{1}{\operatorname{cos}^2\alpha}$ $\operatorname{tg}\alpha = \frac{\operatorname{sen}\alpha}{\operatorname{cos}\alpha}$	$\operatorname{sen}^2\alpha = \frac{1 - \operatorname{cos}(2\alpha)}{2}$ $\operatorname{cos}^2\alpha = \frac{1 + \operatorname{cos}(2\alpha)}{2}$
$\operatorname{sen}(\alpha + \beta) = \operatorname{sen}\alpha \operatorname{cos}\beta + \operatorname{cos}\alpha \operatorname{sen}\beta$ $\operatorname{cos}(\alpha + \beta) = \operatorname{cos}\alpha \operatorname{cos}\beta - \operatorname{sen}\alpha \operatorname{sen}\beta$ $\operatorname{tg}(\alpha + \beta) = \frac{\operatorname{tg}\alpha + \operatorname{tg}\beta}{1 - \operatorname{tg}\alpha \cdot \operatorname{tg}\beta}$	$\operatorname{sen}(\alpha - \beta) = \operatorname{sen}\alpha \operatorname{cos}\beta - \operatorname{cos}\alpha \operatorname{sen}\beta$ $\operatorname{cos}(\alpha - \beta) = \operatorname{cos}\alpha \operatorname{cos}\beta + \operatorname{sen}\alpha \operatorname{sen}\beta$ $\operatorname{tg}(\alpha - \beta) = \frac{\operatorname{tg}\alpha - \operatorname{tg}\beta}{1 + \operatorname{tg}\alpha \operatorname{tg}\beta}$
$\operatorname{sen}(2\alpha) = 2 \operatorname{sen}\alpha \operatorname{cos}\alpha$ $\operatorname{cos}(2\alpha) = \operatorname{cos}^2\alpha - \operatorname{sen}^2\alpha$ $\operatorname{tg}(2\alpha) = \frac{2 \operatorname{tg}\alpha}{1 - \operatorname{tg}^2\alpha}$	$\operatorname{sen}\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \operatorname{cos}\alpha}{2}}$ $\operatorname{cos}\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 + \operatorname{cos}\alpha}{2}}$ $\operatorname{tg}\left(\frac{\alpha}{2}\right) = \pm \sqrt{\frac{1 - \operatorname{cos}\alpha}{1 + \operatorname{cos}\alpha}}$
$\operatorname{sen}\alpha + \operatorname{sen}\beta = 2 \operatorname{sen}\left(\frac{\alpha + \beta}{2}\right) \operatorname{cos}\left(\frac{\alpha - \beta}{2}\right)$ $\operatorname{sen}\alpha - \operatorname{sen}\beta = 2 \operatorname{cos}\left(\frac{\alpha + \beta}{2}\right) \operatorname{sen}\left(\frac{\alpha - \beta}{2}\right)$	$\operatorname{cos}\alpha + \operatorname{cos}\beta = 2 \operatorname{cos}\left(\frac{\alpha + \beta}{2}\right) \operatorname{cos}\left(\frac{\alpha - \beta}{2}\right)$ $\operatorname{cos}\alpha - \operatorname{cos}\beta = -2 \operatorname{sen}\left(\frac{\alpha + \beta}{2}\right) \operatorname{sen}\left(\frac{\alpha - \beta}{2}\right)$