FORMULARIO GONIOMETRIA

RELAZIONE FONDAMENTALE

$$sen^2\alpha + cos^2\alpha = 1$$

$$sen\alpha = \pm\sqrt{1 - cos^2\alpha}$$
$$cos\alpha = \pm\sqrt{1 - sen^2\alpha}$$

ARCHI ASSOCIATI

ANGOLI COMPLEMENTARI:

$sen\,(90° - \alpha) = cos\alpha$

$cos\,(90° - \alpha) = sen\alpha$

$tg\,(90° - \alpha) = ctg\alpha$

ANGOLI ANTICOMPLEMENTARI:

$sen\,(90° + \alpha) = cos\alpha$

$cos\,(90° + \alpha) = -sen\alpha$

$tg\,(90° + \alpha) = -ctg\alpha$

ANGOLI SUPPLEMENTARI:

$sen\,(180° - \alpha) = sen\alpha$

$cos\,(180° - \alpha) = -cos\alpha$

$tg\,(180° - \alpha) = -tg\alpha$

ANGOLI ANTISUPPLEMENTARI:

$sen\,(180° + \alpha) = -sen\alpha$

$cos\,(180° + \alpha) = -cos\alpha$

$tg\,(180° + \alpha) = tg\alpha$

ANGOLI OPPOSTI:

$sen\,(-\alpha)$ o $sen\,(360° - \alpha) = -sen\alpha$

$cos\,(-\alpha)$ o $cos\,(360° - \alpha) = cos\alpha$

$tg\,(-\alpha)$ o $tg\,(360° - \alpha) = -tg\alpha$

FORMULE PER SENO, COSENO E TANGENTE

FORMULE DI ADDIZIONE:

$sen\,(\alpha + \beta) = sen\alpha cos\beta + cos\alpha sen\beta$

$cos\,(\alpha + \beta) = cos\alpha cos\beta - sen\alpha sen\beta$

$tg\,(\alpha + \beta) = \frac{tg\alpha + tg\beta}{1 - tg\alpha tg\beta}$

FORMULE DI SOTTRAZIONE:

$sen\,(\alpha - \beta) = sen\alpha cos\beta - cos\alpha sen\beta$

$cos\,(\alpha - \beta) = cos\alpha cos\beta + sen\alpha sen\beta$

$tg\,(\alpha - \beta) = \frac{tg\alpha - tg\beta}{1 + tg\alpha tg\beta}$

FORMULE DI DUPLICAZIONE:

$sen\,2\alpha = 2sen\alpha cos\alpha$

$cos\,2\alpha = cos^2\alpha - sen^2\alpha$

$tg\,2\alpha = \frac{2tg\alpha}{1 - tg^2\alpha}$

FORMULE DI BISEZIONE:

$sen\,\frac{\alpha}{2} = \pm\sqrt{\frac{1 - \cos\alpha}{2}}$

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

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

FORMULE DI PROSTAFERESI ($\alpha + \beta = p$; $\alpha - \beta = q$):

$$sen p + sen q = 2\, sen \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$\cos p + \cos q = 2 \cos \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$sen p - sen q = 2 \cos \frac{p+q}{2}\, sen \frac{p-q}{2}$$

$$\cos p - \cos q = -2\, sen \frac{p+q}{2}\, sen \frac{p-q}{2}$$

FORMULE PARAMETRICHE ($t = tg\frac{\alpha}{2}$:)

$$sen\alpha = \frac{2t}{1+t^2}$$

$$\cos\alpha = \frac{1-t^2}{1+t^2}$$

$$tg\alpha = \frac{2t}{1-t^2}$$

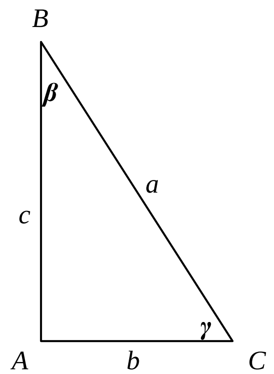
FORMULE DI WERNER:

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

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

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

RELAZIONI TRA GLI ELEMENTI DI UN TRIANGOLO RETTANGOLO



$b = a\, sen\beta$ $\quad$ $b = c\, tg\beta$ $\quad$ $c = a\, sen\gamma$ $\quad$ $c = b\, tg\gamma$

$b = a \cos\gamma$ $\quad$ $b = c\, cotg\gamma$ $\quad$ $c = a \cos\beta$ $\quad$ $c = b\, cotg\beta$

RELAZIONI TRA GLI ELEMENTI DI UN TRIANGOLO QUALSIASI

TEOREMA DEI SENI:

$$\frac{a}{sen\,\alpha} = \frac{b}{sen\,\beta} = \frac{c}{sen\,\gamma}$$

TEOREMA DEL COSENO:

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