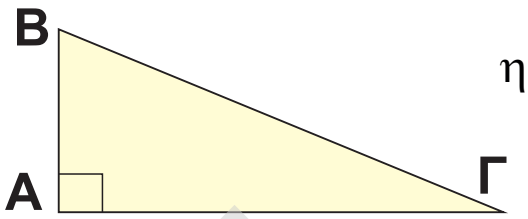
ΤΡΙΓΩΝΟΜΕΤΡΙΑ



$$\eta\mu B=\frac{\beta}{\alpha},\ \sigma\upsilon\nu B=\frac{\gamma}{\alpha},\ \varepsilon\phi B=\frac{\beta}{\gamma},\ \sigma\phi B=\frac{\gamma}{\beta}$$

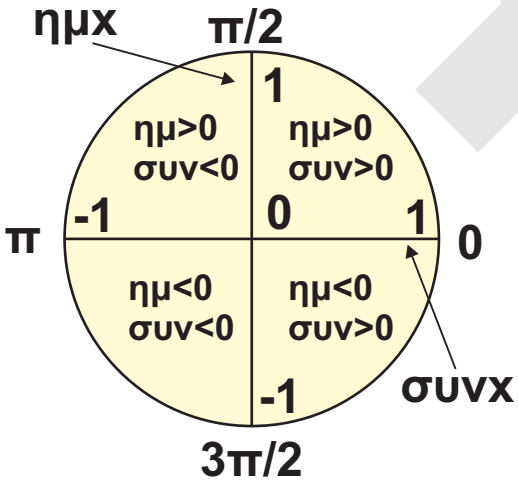
$$-1\le \eta\mu x\le 1,\ -1\le \sigma\upsilon\nu x\le 1$$

Βασικές ταυτότητες

$$\bullet\ \eta\mu^2x+\sigma\upsilon\nu^2x=1 \quad \bullet\ \varepsilon\phi x=\frac{\eta\mu x}{\sigma\upsilon\nu x}$$

$$\bullet\ \varepsilon\phi x\cdot\sigma\phi x=1 \quad \bullet\ \sigma\phi x=\frac{1}{\varepsilon\phi x},\ x\neq\kappa\pi \quad \bullet\ 1+\varepsilon\phi^2x=\frac{1}{\sigma\upsilon\nu^2x}$$

Πρόσημο Τριγ.αριθμών



Πίνακας Τριγ.αριθμών

	30°-π/6	45°-π/4	60°-π/3
ημ	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
συν	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
εφ	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$

Αναγωγή στο 1ο τεταρτημόριο

Αντίθετα	Διαφέρουν π	Διαφέρουν π/2
ημ(-ω) = - ημω	$\eta\mu(\pi\mp\omega)=\pm\eta\mu\omega$	$\eta\mu\left(\frac{\pi}{2}\mp\omega\right)=\sigma\upsilon\nu\omega$
συν(-ω) = συνω	$\sigma\upsilon\nu(\pi\mp\omega)=-\sigma\upsilon\nu\omega$	$\sigma\upsilon\nu\left(\frac{\pi}{2}\mp\omega\right)=\pm\eta\mu\omega$
εφ(-ω) = -εφω	$\varepsilon\phi(\pi\mp\omega)=\mp\varepsilon\phi\omega$	$\varepsilon\phi\left(\frac{\pi}{2}\mp\omega\right)=\pm\sigma\phi\omega$
σφ(-ω) = -σφω	$\sigma\phi(\pi\mp\omega)=\mp\sigma\phi\omega$	$\sigma\phi\left(\frac{\pi}{2}\mp\omega\right)=\pm\varepsilon\phi\omega$

Τύποι α+β και α-β

- $\text{συν}(\alpha \pm \beta) = \text{συν}\alpha \cdot \text{συν}\beta \mp \eta\mu\alpha \cdot \eta\mu\beta$
- $\text{εφ}(\alpha \pm \beta) = \dfrac{\text{εφ}\alpha \pm \text{εφ}\beta}{1 \mp \text{εφ}\alpha \cdot \text{εφ}\beta}$
- $\eta\mu(\alpha \pm \beta) = \eta\mu\alpha \cdot \text{συν}\beta \pm \eta\mu\beta \cdot \text{συν}\alpha$
- $\sigma\text{φ}(\alpha \pm \beta) = \dfrac{\sigma\text{φ}\alpha \cdot \sigma\text{φ}\beta \mp 1}{\sigma\text{φ}\alpha \pm \text{εφ}\beta}$

Τύποι 2α

- $\text{συν}2\alpha = \text{συν}^2\alpha - \eta\mu^2\alpha = 2\text{συν}^2\alpha - 1 = 1 - 2\eta\mu^2\alpha$
- $\eta\mu2\alpha = 2 \cdot \eta\mu\alpha \cdot \text{συν}\alpha$
- $\text{εφ}2\alpha = \dfrac{2\text{εφ}\alpha}{1 - \text{εφ}^2\alpha}$
- $\sigma\text{φ}2\alpha = \dfrac{\sigma\text{φ}^2\alpha - 1}{2\sigma\text{φ}\alpha}$

Τύποι αποτετραγωνισμού

- $\eta\mu^2\alpha = \dfrac{1 - \text{συν}2\alpha}{2}$
- $\text{συν}^2\alpha = \dfrac{1 + \text{συν}2\alpha}{2}$
- $\text{εφ}^2\alpha = \dfrac{1 - \text{συν}2\alpha}{1 + \text{συν}2\alpha}$

Εξισώσεις

- $\text{συν}x = \text{συν}\alpha \Leftrightarrow x = 2\kappa\pi \pm \alpha \ , \ \kappa \in Z$
- $\eta\mu x = \eta\mu\alpha \Leftrightarrow x = 2\kappa\pi + \alpha$ η' $x = 2\kappa\pi + \pi - \alpha \ , \ \kappa \in Z$
- $\text{εφ}x = \text{εφ}\alpha \Leftrightarrow x = \kappa\pi + \alpha \ , \ \kappa \in Z$
- $\sigma\text{φ}x = \sigma\text{φ}\alpha \Leftrightarrow x = \kappa\pi + \alpha \ , \ \kappa \in Z$

Νόμος ημιτόνων - συνημιτόνων

- $\dfrac{\alpha}{\eta\mu\alpha} = \dfrac{\beta}{\eta\mu\beta} = \dfrac{\gamma}{\eta\mu\gamma} = 2R$
- $\alpha^2 = \beta^2 + \gamma^2 - 2\beta\gamma\text{συν}A$