

ΤΥΠΟΙ ΤΡΙΓΩΝΟΜΕΤΡΙΑΣ

$$\eta\mu^2\alpha + \sigma\upsilon\nu^2\alpha = 1$$

$$\epsilon\phi\alpha = \frac{\eta\mu\alpha}{\sigma\upsilon\nu\alpha}$$

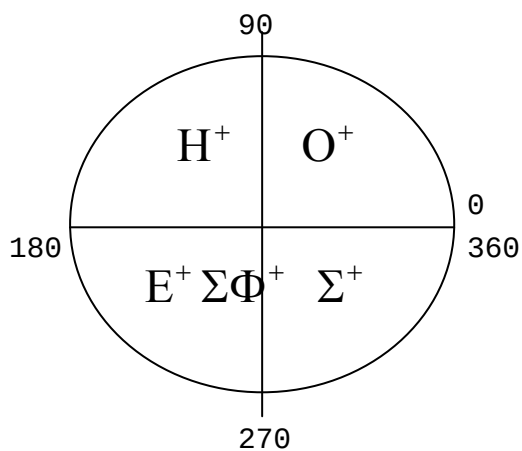
$$\sigma\phi\alpha = \frac{\sigma\upsilon\nu\alpha}{\eta\mu\alpha}$$

$$\tau\epsilon\mu\alpha = \frac{1}{\sigma\upsilon\nu\alpha}$$

$$\sigma\tau\epsilon\mu\alpha = \frac{1}{\eta\mu\alpha}$$

x	0°	30°	45°	60°	90°
ημ	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
συν	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
εφ	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	-
σφ	-	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0

$$\tau\epsilon\mu\nu^2\alpha = 1 + \epsilon\phi^2\alpha \quad , \quad \sigma\tau\epsilon\mu\nu^2\alpha = 1 + \sigma\phi^2\alpha$$



Στις 90° και 270° έχουμε αλλαγή

Δηλαδή: ημ → συν
 συν → ημ
 εφ → σφ
 σφ → εφ

Στις 180° και 360° **δέν** έχουμε αλλαγή

$$\eta\mu(\alpha+\beta) = \eta\mu\alpha \cdot \sigma\upsilon\nu\beta + \eta\mu\beta \cdot \sigma\upsilon\nu\alpha$$

$$\eta\mu(\alpha-\beta) = \eta\mu\alpha \cdot \sigma\upsilon\nu\beta - \eta\mu\beta \cdot \sigma\upsilon\nu\alpha$$

$$\sigma\upsilon\nu(\alpha+\beta) = \sigma\upsilon\nu\alpha \cdot \sigma\upsilon\nu\beta - \eta\mu\alpha \cdot \eta\mu\beta$$

$$\sigma\upsilon\nu(\alpha-\beta) = \sigma\upsilon\nu\alpha \cdot \sigma\upsilon\nu\beta + \eta\mu\alpha \cdot \eta\mu\beta$$

$$\epsilon\phi(\alpha+\beta) = \frac{\epsilon\phi\alpha + \epsilon\phi\beta}{1 - \epsilon\phi\alpha \cdot \epsilon\phi\beta}$$

$$\epsilon\phi(\alpha-\beta) = \frac{\epsilon\phi\alpha - \epsilon\phi\beta}{1 + \epsilon\phi\alpha \cdot \epsilon\phi\beta}$$

$$\sigma\phi(\alpha+\beta) = \frac{\sigma\phi\alpha \cdot \sigma\phi\beta - 1}{\sigma\phi\alpha + \sigma\phi\beta}$$

$$\sigma\phi(\alpha-\beta) = \frac{\sigma\phi\alpha \cdot \sigma\phi\beta + 1}{\sigma\phi\beta - \sigma\phi\alpha}$$

$$\eta\mu 2\alpha = 2\eta\mu\alpha\sigma\upsilon\nu\alpha$$

$$\varepsilon\phi 2\alpha = \frac{2\varepsilon\phi\alpha}{1-\varepsilon\phi^2\alpha}$$

$$\sigma\upsilon\nu 2\alpha = \sigma\upsilon\nu^2\alpha - \eta\mu^2\alpha$$

$$= 2\sigma\upsilon\nu^2\alpha - 1$$

$$\sigma\phi 2\alpha = \frac{1-\varepsilon\phi^2\alpha}{2\varepsilon\phi\alpha}$$

$$= 1 - 2\eta\mu^2\alpha$$

$$\sigma\phi 2\alpha = \frac{\sigma\phi^2\alpha - 1}{2\sigma\phi\alpha}$$

$$\eta\mu 2\alpha = \frac{2\varepsilon\phi\alpha}{1+\varepsilon\phi^2\alpha}$$

$$\sigma\upsilon\nu 2\alpha = \frac{1-\varepsilon\phi^2\alpha}{1+\varepsilon\phi^2\alpha}$$

$$\eta\mu^2\alpha = \frac{1-\sigma\upsilon\nu 2\alpha}{2}$$

$$\sigma\upsilon\nu 3\alpha = 4\sigma\upsilon\nu^3\alpha - 3\sigma\upsilon\nu\alpha$$

$$\eta\mu 3\alpha = 3\eta\mu\alpha - 4\eta\mu^3\alpha$$

$$\sigma\upsilon\nu^2\alpha = \frac{1+\sigma\upsilon\nu 2\alpha}{2}$$

$$\eta\mu A + \eta\mu B = 2\eta\mu \frac{A+B}{2} \cdot \sigma\upsilon\nu \frac{A-B}{2}$$

$$\sigma\upsilon\nu A + \sigma\upsilon\nu B = 2\sigma\upsilon\nu \frac{A+B}{2} \cdot \sigma\upsilon\nu \frac{A-B}{2}$$

$$\eta\mu A - \eta\mu B = 2\eta\mu \frac{A-B}{2} \cdot \sigma\upsilon\nu \frac{A+B}{2}$$

$$\sigma\upsilon\nu A - \sigma\upsilon\nu B = 2\eta\mu \frac{A+B}{2} \cdot \eta\mu \frac{B-A}{2}$$

$$\varepsilon\phi A + \varepsilon\phi B = \frac{\eta\mu(A+B)}{\sigma\upsilon\nu A \cdot \sigma\upsilon\nu B}$$

$$\sigma\phi A + \sigma\phi B = \frac{\eta\mu(B+A)}{\eta\mu A \cdot \eta\mu B}$$

$$\varepsilon\phi A - \varepsilon\phi B = \frac{\eta\mu(A-B)}{\sigma\upsilon\nu A \cdot \sigma\upsilon\nu B}$$

$$\sigma\phi A - \sigma\phi B = \frac{\eta\mu(B-A)}{\eta\mu A \cdot \eta\mu B}$$

$$2\eta\mu A \cdot \sigma\upsilon\nu B = \eta\mu(A+B) + \eta\mu(A-B)$$

$$2\sigma\upsilon\nu A \cdot \sigma\upsilon\nu B = \sigma\upsilon\nu(A+B) + \sigma\upsilon\nu(A-B)$$

$$2\eta\mu A \cdot \eta\mu B = \sigma\upsilon\nu(A-B) - \sigma\upsilon\nu(A+B)$$

Νόμος Ημιτόνων

$$\frac{\alpha}{\eta\mu A} = \frac{\beta}{\eta\mu B} = \frac{\gamma}{\eta\mu \Gamma} = 2R$$

Νόμος Συνημιτόνων

$$\alpha^2 = \beta^2 + \gamma^2 - 2\beta\gamma\sigma\upsilon\nu A$$

$$\beta^2 = \gamma^2 + \alpha^2 - 2\gamma\alpha\sigma\upsilon\nu B$$

$$\gamma^2 = \alpha^2 + \beta^2 - 2\alpha\beta\sigma\upsilon\nu \Gamma$$

Εμβαδόν τριγώνου

$$E = \frac{\alpha\beta\eta\mu\Gamma}{2} = \frac{\alpha\gamma\eta\mu B}{2} = \frac{\beta\gamma\eta\mu A}{2}$$

$$E = 2R^2\eta\mu A\eta\mu B\eta\mu\Gamma$$

$$E = \frac{\alpha\beta\gamma}{4R}$$

$$E = \sqrt{\tau(\tau - \alpha)(\tau - \beta)(\tau - \gamma)}$$