

ΤΥΠΟΛΟΓΙΟ ΜΑΘΗΜΑΤΙΚΩΝ ΓΙΑ ΤΙΣ ΠΑΓΚΥΠΡΙΕΣ ΕΞΕΤΑΣΕΙΣ

1. Στατιστική

$$\sigma = \sqrt{\frac{\sum_{i=1}^v (x_i - \bar{x})^2}{v}} \quad \text{ή} \quad \sigma = \sqrt{\frac{\sum_{i=1}^k f_i (x_i - \bar{x})^2}{v}} = \sqrt{\frac{\sum_{i=1}^k f_i x_i^2}{v} - \bar{x}^2}, \quad \text{όπου } v = \sum_{i=1}^k f_i$$

2. Τριγωνομετρία

$$\eta\mu(A \pm B) = \eta\mu A \sigma\upsilon\nu B \pm \sigma\upsilon\nu A \eta\mu B, \quad \sigma\upsilon\nu(A \pm B) = \sigma\upsilon\nu A \sigma\upsilon\nu B \mp \eta\mu A \eta\mu B$$

$$2\eta\mu\alpha\sigma\upsilon\nu\beta = \eta\mu(\alpha - \beta) + \eta\mu(\alpha + \beta), \quad 2\sigma\upsilon\nu\alpha\sigma\upsilon\nu\beta = \sigma\upsilon\nu(\alpha - \beta) + \sigma\upsilon\nu(\alpha + \beta)$$

$$2\eta\mu\alpha\eta\mu\beta = \sigma\upsilon\nu(\alpha - \beta) - \sigma\upsilon\nu(\alpha + \beta), \quad \eta\mu 2\alpha = 2\eta\mu\alpha \cdot \sigma\upsilon\nu\alpha, \quad \sigma\upsilon\nu 2\alpha = \sigma\upsilon\nu^2\alpha - \eta\mu^2\alpha$$

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

$$\eta\mu 2\alpha = \frac{2t}{1+t^2}, \quad \sigma\upsilon\nu 2\alpha = \frac{1-t^2}{1+t^2}, \quad t = \varepsilon\varphi\alpha$$

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

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

Λύση τριγωνομετρικών εξισώσεων:

| | Σε μοίρες | Σε ακτίνια |
|---|---|---|
| $\eta\mu\chi = \eta\mu\alpha$ | $\chi = 360^\circ\kappa + \alpha$ ή $\chi = 360^\circ\kappa + 180^\circ - \alpha, \kappa \in \mathbb{Z}$ | $\chi = 2\kappa\pi + \alpha$ ή $\chi = 2\kappa\pi + \pi - \alpha, \kappa \in \mathbb{Z}$ |
| $\sigma\upsilon\nu\chi = \sigma\upsilon\nu\alpha$ | $\chi = 360^\circ\kappa \pm \alpha, \kappa \in \mathbb{Z}$ | $\chi = 2\kappa\pi \pm \alpha, \kappa \in \mathbb{Z}$ |
| $\varepsilon\varphi\chi = \varepsilon\varphi\alpha$ | $\chi = 180^\circ\kappa + \alpha, \kappa \in \mathbb{Z}$ | $\chi = \kappa\pi + \alpha, \kappa \in \mathbb{Z}$ |

3. Γεωμετρία

| | | |
|-------------------|---|---|
| Ορθό Πρίσμα | $E_\pi = \Pi_\beta \cdot \upsilon$ | $V = E_\beta \cdot \upsilon$ |
| Κανονική Πυραμίδα | $E_\pi = \frac{1}{2} \Pi_\beta \cdot h$ | $V = \frac{E_\beta \cdot \upsilon}{3}$ |
| Κύλινδρος | $E_\kappa = 2\pi R\upsilon$ | $V = \pi R^2 \upsilon$ |
| Κώνος | $E_\kappa = \pi R\lambda$ | $V = \frac{\pi R^2 \upsilon}{3}$ |
| Κόλουρος Κώνος | $E_\kappa = \pi(R + \rho)\lambda$ | $V = \frac{\pi \upsilon}{3} (R^2 + R\rho + \rho^2)$ |

4. Αναλυτική Γεωμετρία

Απόσταση δυο σημείων $A(x_1, \psi_1)$ και $B(x_2, \psi_2)$: $d = \sqrt{(x_2 - x_1)^2 + (\psi_2 - \psi_1)^2}$

Απόσταση σημείου $A(x_1, \psi_1)$ από ευθεία $Ax + B\psi + \Gamma = 0$: $d = \frac{|Ax_1 + B\psi_1 + \Gamma|}{\sqrt{A^2 + B^2}}$

Έλλειψη $\frac{x^2}{\alpha^2} + \frac{\psi^2}{\beta^2} = 1$, $\gamma = \sqrt{\alpha^2 - \beta^2}$, $\alpha > \beta$ Εστίες $(\pm\gamma, 0)$, Διευθετούσες $\chi = \pm \frac{\alpha}{\varepsilon}$,

Εκκεντρότητα $\varepsilon = \frac{\gamma}{\alpha}$

5. Παράγωγοι

$$(u \cdot v)' = u' \cdot v + u \cdot v', \quad \left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}, \quad \frac{d\psi}{d\chi} = \frac{d\psi}{du} \cdot \frac{du}{d\chi}$$

$$(\eta\mu\chi)' = \sigma\upsilon\eta\chi, \quad (\sigma\upsilon\eta\chi)' = -\eta\mu\chi, \quad (\varepsilon\phi\chi)' = \tau\epsilon\mu^2\chi, \quad (\ln\chi)' = \frac{1}{\chi}$$

6. Ολοκληρώματα

$$\int \tau\epsilon\mu\chi \, d\chi = \ln|\tau\epsilon\mu\chi + \varepsilon\phi\chi| + c \quad \int \sigma\tau\epsilon\mu\chi \, d\chi = \ln\left|\varepsilon\phi\frac{\chi}{2}\right| + c$$

$$\int \frac{d\chi}{\sqrt{\alpha^2 - \chi^2}} = \tau\omicron\xi\eta\mu\frac{\chi}{\alpha} + c \quad \int \frac{d\chi}{\alpha^2 + \chi^2} = \frac{1}{\alpha} \tau\omicron\xi\varepsilon\phi\frac{\chi}{\alpha} + c$$

$$7. \text{ Απλός τόκος: } T = \frac{K \cdot E \cdot X}{100}$$