

Na egzaminie dopuszczalne jest jedynie używanie prostego kalkulatora.

$$\begin{aligned}
v_{d_{pk}} &= -\cos A_{pk}^0 \cdot \Delta X_p - \sin A_{pk}^0 \cdot \Delta Y_p + \cos A_{pk}^0 \cdot \Delta X_k + \sin A_{pk}^0 \cdot \Delta Y_k + d_{pk}^0 - d_{pk}^{obs} \\
v_{K_{pk}} &= \frac{\Delta Y_{pk}^0}{(d_{pk}^0)^2} \cdot \Delta X_p - \frac{\Delta X_{pk}^0}{(d_{pk}^0)^2} \cdot \Delta Y_p - \frac{\Delta Y_{pk}^0}{(d_{pk}^0)^2} \cdot \Delta X_k + \frac{\Delta X_{pk}^0}{(d_{pk}^0)^2} \cdot \Delta Y_k - \Delta C_p + A_{pk}^0 - C_p^0 - K_{pk}^{obs} \\
v_{\alpha_{pk}} &= \frac{\Delta Y_{cl}^0}{(d_{cl}^0)^2} \cdot \Delta X_l - \frac{\Delta X_{cl}^0}{(d_{cl}^0)^2} \cdot \Delta Y_l - \frac{\Delta Y_{cp}^0}{(d_{cp}^0)^2} \cdot \Delta X_p + \frac{\Delta X_{cp}^0}{(d_{cp}^0)^2} \cdot \Delta Y_p + \left(\frac{\Delta Y_{cp}^0}{(d_{cp}^0)^2} - \frac{\Delta Y_{cl}^0}{(d_{cl}^0)^2} \right) \cdot \Delta X_c + \left(-\frac{\Delta X_{cp}^0}{(d_{cp}^0)^2} + \frac{\Delta X_{cl}^0}{(d_{cl}^0)^2} \right) \cdot \Delta Y_c + \alpha_{lcp}^0 - \alpha_{lcp}^{obs}
\end{aligned}$$

$$a = \hat{\sigma}_0 \cdot \sqrt{2\lambda_1 \cdot F_\gamma}, \quad b = \hat{\sigma}_0 \cdot \sqrt{2\lambda_2 \cdot F_\gamma}, \quad \varphi = \frac{1}{2} \arctg \left(\frac{2 \cdot Q_{\hat{X}_i \hat{Y}_i}}{Q_{\hat{X}_i} - Q_{\hat{Y}_i}} \right)$$

$$\hat{C}_{\hat{X}} = \hat{\sigma}_0^2 \cdot (A^T P A)^{-1}, \quad \hat{C}_{\hat{V}} = \hat{\sigma}_0^2 \left(P^{-1} - A \cdot (A^T P A)^{-1} A^T \right), \quad \hat{C}_{\hat{h}} = \hat{\sigma}_0^2 \left(A \cdot (A^T P A)^{-1} A^T \right)$$

$$\hat{V} = -P^{-1} B^T (B P^{-1} B^T)^{-1} \Delta.$$