Worksheet: temporal time series analysis (part II)

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1. Reproduce the figure in the slide *Estimate coefficients of AR(3) model using the Yule-Walker estimators* in lecture 2. You may want to use the sample script available here. To run this code, you will need to complete the function estimateCoefsAndNoisVarARpYW in the module tsAnalysisUtils.py, imported in the previous script.

   Hints:

   solving the system of equations $A\mathbf{x} = \mathbf{b}$ in Numpy to estimate the vector $\mathbf{x}$ that best approximates the previous equations in Numpy you can use `x = np.linealg.solve(A, x)`.

   computing inner products $\mathbf{x}^\intercal\mathbf{y}$ in Numpy to calculate the previous inner product between vector $\mathbf{x}$ and $\mathbf{y}$ in Numpy you can use `np.inner(x, y)`.

   computing the inverse A^{-1} of matrix A in Numpy to calculate the previous inverse of matrix A in Numpy you can use `np.linalg.inv(A)`.