**Assignment #7**

1. (Paper) Solve the following system of linear equations using Gauss Elimination with partial pivoting method

$$\begin{bmatrix} 1 & 4 & 5 \\ 2 & 2 & 5 \\ -4 & 1 & 3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

2. (Python) Solve the following tridiagonal system of linear equations using Gauss Elimination

$$\begin{cases} 10x + y = 1 \\ 5x + 20y + 2z = 2 \\ 6y + 30z + 3t = 1 \\ 7z + 40t + 4s = -1 \\ 8t + 50s = 1 \end{cases}$$

3. (Python) Solve the following tridiagonal system of linear equations using Gauss Elimination

$$\begin{cases} x_1 + 4x_2 = 1 \\ 3x_1 + 4x_2 + x_3 = 1 \\ 2x_2 + 3x_3 + 4x_4 = 1 \\ x_3 + 3x_4 = 1 \end{cases}$$

4. (Paper) Solve the following system with Gauss-Jordan method.

$$\begin{aligned} x_1 + x_2 - x_3 &= -3 \\ 6x_1 + 2x_2 + 2x_3 &= 2 \\ -3x_1 + 4x_2 + x_3 &= 1 \end{aligned}$$