**MATH 373 Project 3 (100 points)**

**Due on 10:50 AM of May 9th, 2025**
**Please submit your report, source codes, and envroment which TA can run your codes**

Consider the linear system of equations

$$\begin{pmatrix} 3 & -13 & 9 & 3 \\ -6 & 4 & 1 & -18 \\ 6 & -2 & 2 & 4 \\ 12 & -8 & 6 & 10 \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{pmatrix} = \begin{pmatrix} -19 \\ -34 \\ 16 \\ 26 \end{pmatrix}$$

1) Solve the system using Gaussian elimination with scaled partial pivoting.

2) Show intermediate matrices at each step.