

Part A (Plain LU factorization)

In the following, let

$$A = \begin{pmatrix} -4 & 3 & 3 \\ 20 & -13 & -14 \\ -16 & 8 & 8 \end{pmatrix}.$$

1. By hand, compute its LU factorization without pivoting. That is, compute L and U . Also, verify that $A = LU$; really do the matrix multiplication!

2. Use your factorization to solve $Ax = b$ where

$$b = \begin{pmatrix} -1 \\ 6 \\ -8 \end{pmatrix}$$