

(10 pts) Solve the linear system

$$\begin{aligned}x_1 + 3x_2 + 2x_3 &= 2 \\-2x_1 - 5x_2 - 3x_3 &= -3 \\3x_1 + 11x_2 + 10x_3 &= 12\end{aligned}$$

using the process developed in class (don't do any row swapping). In particular do the steps below (show all work):

- Compute the LU factorization of A . Explicitly state the L and U matrices. Verify that $L \cdot U = A$
- Solve $Lz = b$ for z .
- Solve $Ux = z$ for x .