

M353 2.2 LU (S. Zhang) .

1. (2.2:a1) Solve the following system $(A|b)$ by

- (a) GE without pivoting, (no row switching, no row multiplication)
- (b) finding $A = LU$ where L is the unit lower triangular matrix, and using LU decomposition of A to solve $Ax = b$ again.

$$\left(\begin{array}{ccc|c} 1 & -3 & 3 & 4 \\ -2 & 0 & 1 & -1 \\ 3 & -1 & -1 & 2 \end{array} \right)$$

2. (2.2:a2) Solve the following system $(A|b)$ by

- (a) GE without pivoting, (no row switching, no row multiplication)
- (b) finding $A = LU$ where L is the unit lower triangular matrix,
- (c) using LU decomposition of A to solve $Ax = b$ again.

$$\left(\begin{array}{cccc|c} 1 & 1 & 0 & -1 & 0 \\ -2 & 0 & 1 & 4 & -1 \\ 1 & 1 & -1 & 2 & -1 \\ 3 & 5 & 1 & -3 & -1 \end{array} \right)$$