

M353 2.1 GE (S. Zhang) .

1. (2.1:a1) Find A^{-1} by elementary row operations.

$$A = \begin{pmatrix} 1 & -3 & 2 \\ -1 & 0 & 2 \\ 1 & -1 & -1 \end{pmatrix}$$

2. (2.1:a2) Find A^{-1} by elementary row operations,

$$A = \begin{pmatrix} 1 & 0 & 1 & 2 \\ 2 & -1 & 3 & 3 \\ -1 & 0 & -2 & 0 \\ 0 & 3 & -4 & 6 \end{pmatrix}$$

3. (2.1:a3) Find $\det(A)$ by direct expansions. Then again, by reducing A to an upper triangular matrix.

$$A = \begin{pmatrix} 1 & 1 & 2 \\ 2 & 4 & 7 \\ -6 & -12 & -22 \end{pmatrix}$$

4. (2.1:a4) Find $\det(A)$ by expansions directly. Then again, by reducing A to an upper triangular matrix.

$$A = \begin{pmatrix} 1 & 1 & 2 & -1 \\ 0 & 1 & 2 & -1 \\ 0 & 2 & 2 & -1 \\ 2 & 2 & 5 & 0 \end{pmatrix}$$

5. (2.1:a5) Show that GE without pivoting fails, or solve the system $(A|b)$.

$$(a) \begin{pmatrix} 1 & -3 & 2 & | & -2 \\ -2 & 6 & 2 & | & 4 \\ 1 & -1 & -1 & | & -2 \end{pmatrix}$$

$$(b) \begin{pmatrix} 2 & 1 & 1 & | & 2 \\ -4 & -4 & -1 & | & -1 \\ 2 & -1 & 5 & | & 8 \end{pmatrix}$$