Linear algebra, WNE, 2018/2019
meeting 14.

20 November 2018

Problems

1. Find the determinants of the following matrices
$\begin{bmatrix} 1 & 2 \\ -1 & -5 \end{bmatrix}, \begin{bmatrix} 2 & -1 & 3 \\ 4 & 5 & -1 \\ 2 & 6 & -4 \end{bmatrix}, \begin{bmatrix} 1 & 2 & 1 & 3 \\ 0 & 1 & 1 & 0 \\ 2 & 1 & 3 & 1 \\ 1 & 0 & 2 & 0 \end{bmatrix}, \begin{bmatrix} 2 & 1 & 1 & 2 \\ -1 & 0 & 0 & 1 \\ 0 & 3 & 1 & 0 \\ 3 & 4 & 5 & 4 \end{bmatrix}$.
2. Let $A = \begin{bmatrix} 1 & r & 1 & 0 \\ 0 & 1 & r & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}$. For which real numbers $r \in \mathbb{R}$, $\det A = 1$?
3. Calculate the determinant of $\begin{bmatrix} 3 & 4 & 2 & 2 \\ 4 & 5 & 6 & 5 \\ 2 & 3 & 6 & 0 \\ 8 & 7 & 10 & 18 \end{bmatrix}$, by transforming it to echelon form.
4. Calculate the determinant of $\begin{bmatrix} 3 & 2 & 1 & 6 & 5 & -1 \\ -1 & 0 & 2 & 1 & 1 & 2 \\ 0 & 1 & 4 & 9 & 11 & -1 \\ 0 & 0 & 0 & 3 & -1 & 0 \\ 0 & 0 & 0 & -1 & 0 & 2 \\ 0 & 0 & 0 & 2 & 1 & 3 \end{bmatrix}$.

Homework

1. Calculate the determinant of $\begin{bmatrix} 3 & 6 & 0 & 6 & 3 \\ 4 & 5 & 0 & 4 & 2 \\ 5 & 4 & 3 & 3 & 2 \\ 4 & 3 & 1 & 2 & 2 \\ 1 & 2 & 1 & 2 & 1 \end{bmatrix}$, by transforming it to echelon form.
2. Calculate the determinant of $\begin{bmatrix} 7 & 9 & 8 & 2 \\ 4 & 6 & 7 & 0 \\ 8 & 1 & 0 & 0 \\ 3 & 4 & 0 & 0 \end{bmatrix}$.