IGEE-UMBB

EE 174 : Recitation set 8

1. Find the determinants of $A = \begin{pmatrix} 1 & 2 & -2 & 0 \\ 2 & 3 & -4 & 1 \\ -1 & -2 & 0 & 2 \\ 0 & 2 & 5 & 3 \end{pmatrix}$,

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

2. Compute the determinant of $A = \begin{pmatrix} 0 & 0 & 0 & 2 \\ 0 & 0 & 2 & 6 \\ 0 & 1 & 2 & 2 \\ 4 & 4 & 8 & 8 \end{pmatrix}$; Comment the form of A and your result. Can we generalize this result?

3. Given the matrix $A = \begin{pmatrix} 4 & 2 \\ 1 & 3 \end{pmatrix}$, for which values of the scalar λ will the matrix $(A - \lambda I)$ be singular?

4. Compute the inverse, if it exists, of the following matrices:

$$A = \begin{pmatrix} 1 & 0 & 2 \\ 2 & -1 & 3 \\ 4 & 1 & 8 \end{pmatrix} \qquad B = \begin{pmatrix} 1 & 0 & 2 \\ 2 & -1 & 3 \\ 3 & -1 & 5 \end{pmatrix}$$

5. Consider the system of linear equations

$$x + y + z = 2$$
$$x + 3y + 3z = 0$$
$$x + 3y + 5z = 2$$

Does the system have a solution? If so, is it unique?