

Assignment 2

Tanay Yadav - AI20BTECH11026

Download the python codes from:

https://github.com/tanayyadav28/EE3900-Assignments/blob/main/Assignment_2/code/Assignment_2.py

Download the latex-tikz codes from:

https://github.com/tanayyadav28/EE3900-Assignments/blob/main/Assignment_2/Assignment_2.tex

1 PROBLEM

[Matrices Q2; Q47]

If $A = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$, then find AB , BA .

Show that $AB \neq BA$.

2 SOLUTION

Performing respective matrix multiplications,

$$AB = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \times \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \quad (2.0.1)$$

$$AB = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix} \quad (2.0.2)$$

Similarly,

$$BA = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \times \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \quad (2.0.3)$$

$$BA = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} \quad (2.0.4)$$

$$(2.0.5)$$

$$\therefore AB \neq BA \quad (2.0.6)$$