EE3900 : Assignment-2

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Download all python codes from

https://github.com/Rahul27n/EE3900/blob/main/
    Assignment_2/Assignment_2.py

and latex-tikz codes from

https://github.com/Rahul27n/EE3900/blob/main/
    Assignment_2/Assignment_2.tex

1 QUESTION: MATRIX Q2.16(II)

It is given : $\mathbf{A} = \begin{pmatrix} -1 & 2 & 3 \\ 5 & 7 & 9 \\ -1 & 1 & 1 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} -4 & 1 & -5 \\ 1 & 2 & 0 \\ 1 & 3 & 1 \end{pmatrix}$,

then verify that $(\mathbf{A} - \mathbf{B})' = \mathbf{A}' - \mathbf{B}'$.

2 SOLUTION

We clearly have,

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 3 & 1 & 8 \\ 4 & 5 & 9 \\ -2 & -2 & 0 \end{pmatrix} \qquad (2.0.1)$$

Therefore the transpose of $\mathbf{A} - \mathbf{B}$ is given by :

$$(\mathbf{A} - \mathbf{B})' = \begin{pmatrix} 3 & 4 & -2 \\ 1 & 5 & -2 \\ 8 & 9 & 0 \end{pmatrix} \qquad (2.0.2)$$

Now,

$$\mathbf{A}' - \mathbf{B}' = \begin{pmatrix} -1 & 5 & -1 \\ 2 & 7 & 1 \\ 3 & 9 & 1 \end{pmatrix} - \begin{pmatrix} -4 & 1 & 1 \\ 1 & 2 & 3 \\ -5 & 0 & 1 \end{pmatrix} \qquad (2.0.3)$$

$$\mathbf{A}' - \mathbf{B}' = \begin{pmatrix} 3 & 4 & -2 \\ 1 & 5 & -2 \\ 8 & 9 & 0 \end{pmatrix} \qquad (2.0.4)$$

Therefore from (2.0.2) and (2.0.4) we can conclude
that $(\mathbf{A} - \mathbf{B})' = \mathbf{A}' - \mathbf{B}'$.