

Assignment 7

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Download all python and latex codes from

<https://github.com/abhiroopchintalapudi03/EE3900.git>

$$3\mathbf{X} = \begin{pmatrix} -6 & -10 \\ 12 & 14 \\ -31 & -7 \end{pmatrix} \quad (2.0.10)$$

$$\mathbf{X} = \begin{pmatrix} -2 & -10/3 \\ 4 & 14/3 \\ -31/3 & -7/3 \end{pmatrix} \quad (2.0.11)$$

1 PROBLEM 2.42

If $\mathbf{A} = \begin{pmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{pmatrix}$, then find the matrix \mathbf{X} such that $2\mathbf{A} + 3\mathbf{X} = 5\mathbf{B}$.

$\Rightarrow \mathbf{X} = \begin{pmatrix} -2 & -3.33 \\ 4 & 4.67 \\ -10.33 & -2.33 \end{pmatrix}$ for $2\mathbf{A} + 3\mathbf{X} = 5\mathbf{B}$ to be satisfied.

2 SOLUTION

$$\mathbf{A} = \begin{pmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{pmatrix} \quad (2.0.1)$$

$$\Rightarrow 2\mathbf{A} = \begin{pmatrix} 16 & 0 \\ 8 & -4 \\ 6 & 12 \end{pmatrix} \quad (2.0.2)$$

$$\mathbf{B} = \begin{pmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{pmatrix} \quad (2.0.3)$$

$$\Rightarrow 5\mathbf{B} = \begin{pmatrix} 10 & -10 \\ 20 & 10 \\ -25 & 5 \end{pmatrix} \quad (2.0.4)$$

$$2\mathbf{A} + 3\mathbf{X} = 5\mathbf{B} \quad (2.0.5)$$

$$\Rightarrow 3\mathbf{X} = 5\mathbf{B} - 2\mathbf{A} \quad (2.0.6)$$

$$\Rightarrow 3\mathbf{X} = \begin{pmatrix} 10 & -10 \\ 20 & 10 \\ -25 & 5 \end{pmatrix} - \begin{pmatrix} 16 & 0 \\ 8 & -4 \\ 6 & 12 \end{pmatrix} \quad (2.0.7)$$

$$\Rightarrow 3\mathbf{X} = \begin{pmatrix} 10 - 16 & -10 - 0 \\ 20 - 8 & 10 - (-4) \\ -25 - 6 & 5 - 12 \end{pmatrix} \quad (2.0.8)$$

$$\Rightarrow 3\mathbf{X} = \begin{pmatrix} -6 & -10 \\ 12 & 14 \\ -31 & -7 \end{pmatrix} \quad (2.0.9)$$