

Assignment 1

Chirag Mehta - AI20BTECH11006

Download all latex-tikz codes from

<https://github.com/cmaspi/EE3900/blob/main/Assignment-2/main.tex>

1 PROBLEM

(Matrix Q 2.10) Solve the equation for x, y, z and t , if

$$2 \begin{pmatrix} x & z \\ y & t \end{pmatrix} + 3 \begin{pmatrix} 1 & -1 \\ 0 & 2 \end{pmatrix} = 3 \begin{pmatrix} 3 & 5 \\ 4 & 6 \end{pmatrix} \quad (1.0.1)$$

2 SOLUTION

let

$$A = \begin{pmatrix} x & z \\ y & t \end{pmatrix} \quad (2.0.1)$$

Now,

$$2A + \begin{pmatrix} 3 & -3 \\ 0 & 6 \end{pmatrix} = \begin{pmatrix} 9 & 15 \\ 12 & 18 \end{pmatrix} \quad (2.0.2)$$

$$\Rightarrow 2A = \begin{pmatrix} 9-3 & 15+3 \\ 12-0 & 18-6 \end{pmatrix} \quad (2.0.3)$$

$$\Rightarrow A = \frac{1}{2} \begin{pmatrix} 6 & 18 \\ 12 & 12 \end{pmatrix} \quad (2.0.4)$$

$$\Rightarrow A = \begin{pmatrix} 3 & 9 \\ 6 & 6 \end{pmatrix} \quad (2.0.5)$$

Using (2.0.1), comparing the two matrices

$$\Rightarrow x = 3 \quad (2.0.6)$$

$$\Rightarrow z = 9 \quad (2.0.7)$$

$$\Rightarrow y = 6 \quad (2.0.8)$$

$$\Rightarrow t = 6 \quad (2.0.9)$$