

Assignment-7

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Download all python codes from

<https://github.com/ThurpuNaveena/Assignment7/tree/main/Assignment7>

and latex-tikz codes from

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since matrices are equal

$$2x^2 = 1 \quad (2.0.7)$$

$$x = \pm \frac{1}{\sqrt{2}} \quad (2.0.8)$$

$$6y^2 = 1 \quad (2.0.9)$$

$$y = \pm \frac{1}{\sqrt{6}} \quad (2.0.10)$$

$$3z^2 = 1 \quad (2.0.11)$$

$$z = \pm \frac{1}{\sqrt{3}} \quad (2.0.12)$$

1 QUESTION No-2.43

Find the values of x,y,z if the matrix

$$A = \begin{pmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{pmatrix} \text{ satisfy the equation } A'A = I$$

2 SOLUTION

Given that

$$A = \begin{pmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{pmatrix} \quad (2.0.1)$$

$$A' = \begin{pmatrix} 0 & x & x \\ 2y & y & -y \\ z & -z & z \end{pmatrix} \quad (2.0.2)$$

$$I = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \quad (2.0.3)$$

$$A'A = I \quad (2.0.4)$$

putting values in (2.0.4)

$$\begin{pmatrix} 0 & x & x \\ 2y & y & -y \\ z & -z & z \end{pmatrix} \begin{pmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \quad (2.0.5)$$

$$\begin{pmatrix} 2x^2 & 0 & 0 \\ 0 & 6y^2 & 0 \\ 0 & 0 & 3z^2 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \quad (2.0.6)$$