Assignment 3

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and latex-tikz codes from

https://github.com/kavya309/ASSIGNMNT 3/main.tex

1 Question No.2.37

Find the intercepts cut off by the plane $\begin{pmatrix}2 & 1 & 1\end{pmatrix}$x= 5

2 SOLUTION

The given plane is ,

$$\begin{pmatrix}2 & 1 & 1\end{pmatrix} x = 5 \tag{2.0.1}$$

$$Let, x = \begin{pmatrix}e_1\\0\\0\end{pmatrix} \tag{2.0.2}$$

Substituting in (2.0.1)

$$\begin{pmatrix}2 & 1 & 1\end{pmatrix}\begin{pmatrix}e_1\\0\\0\end{pmatrix} = 5 \tag{2.0.3}$$

$$\begin{pmatrix}2e_1 + 0 + 0\end{pmatrix} = 5 \tag{2.0.4}$$

$$2e_1 = 5 \tag{2.0.5}$$

$$e_1 = \frac{5}{2} \tag{2.0.6}$$

$$Let, x = \begin{pmatrix}0\\e_2\\0\end{pmatrix} \tag{2.0.7}$$

Substituting in (2.0.1)

$$\begin{pmatrix}2 & 1 & 1\end{pmatrix}\begin{pmatrix}0\\e_2\\0\end{pmatrix} = 5 \tag{2.0.8}$$

$$\begin{pmatrix}0 + e_2 + 0\end{pmatrix} = 5 \tag{2.0.9}$$

$$e_2 = 5 \tag{2.0.10}$$

$$Let, x = \begin{pmatrix}0\\0\\e_3\end{pmatrix} \tag{2.0.11}$$

Substituting in (2.0.2)

$$\begin{pmatrix}2 & 1 & 1\end{pmatrix}\begin{pmatrix}0\\0\\e_3\end{pmatrix} = 5 \tag{2.0.12}$$

$$\begin{pmatrix}0 + 0 + e_3\end{pmatrix} = 5 \tag{2.0.13}$$

$$e_3 = 5 \tag{2.0.14}$$

Hence the intercepts cut off by the plane $\begin{pmatrix}2 & 1 & 1\end{pmatrix}$x= 5 are 5/2 , 5 , 5