Assignment 3

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and latex-tikz codes from

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 ,

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} x = 5 \qquad (2.0.1)$$

$$Let, x = \begin{pmatrix} a \\ 0 \\ 0 \end{pmatrix} \qquad (2.0.2)$$

Substituting in (2.0.1)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} a \\ 0 \\ 0 \end{pmatrix} = 5 \qquad (2.0.3)$$

$$\begin{pmatrix} 2a + 0 + 0 \end{pmatrix} = 5 \qquad (2.0.4)$$

$$2a = 5 \qquad (2.0.5)$$

$$a = \frac{5}{2} \qquad (2.0.6)$$

$$Let, x = \begin{pmatrix} 0 \\ b \\ 0 \end{pmatrix} \qquad (2.0.7)$$

Substituting in (2.0.1)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ b \\ 0 \end{pmatrix} = 5 \qquad (2.0.8)$$

$$\begin{pmatrix} 0 + b + 0 \end{pmatrix} = 5 \qquad (2.0.9)$$

$$b = 5 \qquad (2.0.10)$$

$$Let, x = \begin{pmatrix} 0 \\ 0 \\ c \end{pmatrix} \qquad (2.0.11)$$

Substituting in (2.0.2)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 0 \\ c \end{pmatrix} = 5 \qquad (2.0.12)$$

$$\begin{pmatrix} 0 + 0 + c \end{pmatrix} = 5 \qquad (2.0.13)$$

$$c = 5 \qquad (2.0.14)$$

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