

# Assignment 3

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and latex-tikz codes from

[https://github.com/kavya309/ASSIGNMNT\\_3/main.tex](https://github.com/kavya309/ASSIGNMNT_3/main.tex)

Substituting in (2.0.2)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} (e_3) = 5 \quad (2.0.12)$$

$$(0 + 0 + e_3) = 5 \quad (2.0.13)$$

$$e_3 = 5 \quad (2.0.14)$$

## 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 ,

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

$$\text{Let, } x = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} (e_1) \quad (2.0.2)$$

Substituting in (2.0.1)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix} (e_1) = 5 \quad (2.0.3)$$

$$(2e_1 + 0 + 0) = 5 \quad (2.0.4)$$

$$2e_1 = 5 \quad (2.0.5)$$

$$e_1 = \frac{5}{2} \quad (2.0.6)$$

$$\text{Let, } x = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} (e_2) \quad (2.0.7)$$

Substituting in (2.0.1)

$$\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} (e_2) = 5 \quad (2.0.8)$$

$$(0 + e_2 + 0) = 5 \quad (2.0.9)$$

$$e_2 = 5 \quad (2.0.10)$$

$$\text{Let, } x = \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} (e_3) \quad (2.0.11)$$

Hence the intercepts cut off by the plane  $\begin{pmatrix} 2 & 1 & 1 \end{pmatrix} x = 5$  are  $\left(\frac{5}{2} \ 5 \ 5\right)$