Assignment 4

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Download all python codes from

https://github.com/Adarsh541/EE3900/blob/main/EE3900_As4/codes/EE3900_As4.py

Download latex-tikz codes from

https://github.com/Adarsh541/EE3900/blob/main/EE3900_As1/EE3900_As4.tex

1 Problem(Linear forms Q.2.34)

Find the equation of a line passing through $\begin{pmatrix}1\\2\\3\end{pmatrix}$ and perpendicular to the plane

$$\begin{pmatrix}1 & 2 & -5\end{pmatrix}\mathbf{x} = -9 \tag{1.0.1}$$

2 Solution

Let $\mathbf{p} = \begin{pmatrix}1\\2\\3\end{pmatrix}$ be a point on the line L. Direction vectors of a line perpendicular to the plane (1.0.1) are

$$\mathbf{a} = \begin{pmatrix}1\\2\\-5\end{pmatrix} \tag{2.0.1}$$

Equation of required line is

$$L : \mathbf{x} = \mathbf{p} + \lambda\mathbf{a} \tag{2.0.2}$$

$$= \begin{pmatrix}1\\2\\3\end{pmatrix} + \lambda\begin{pmatrix}1\\2\\-5\end{pmatrix} \tag{2.0.3}$$

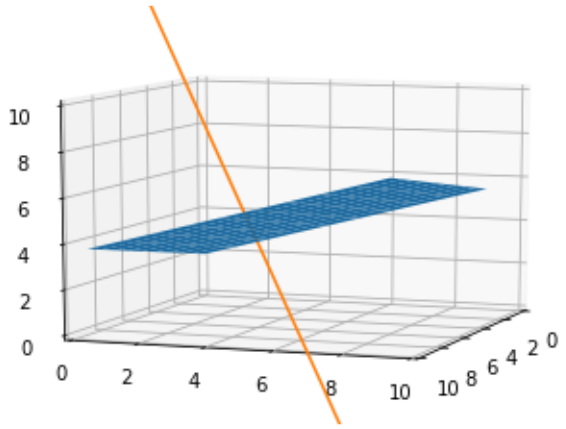

Fig. 0: Plot of plane and the line