ASSIGNMENT-4

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1 QUESTION No-2.35 (B) (LINEAR FORMS)

Find the equation of the planes that passes through the point $\mathbf{A} = \begin{pmatrix} 1 \\ 4 \\ 6 \end{pmatrix}$ and the normal to the plane is

$\mathbf{n} = \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix}$.

2 SOLUTION

Given point $\mathbf{A} = \begin{pmatrix} 1 \\ 4 \\ 6 \end{pmatrix}$ and the normal vector to the plane is $\mathbf{n} = \begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix}$. Equation of the plane is given by

$$\mathbf{n}^T (\mathbf{x} - \mathbf{A}) = 0 \qquad (2.0.1)$$

$$\begin{pmatrix} 1 & -2 & 1 \end{pmatrix} \mathbf{x} = \begin{pmatrix} 1 & -2 & 1 \end{pmatrix} \begin{pmatrix} 1 \\ 4 \\ 6 \end{pmatrix} \qquad (2.0.2)$$

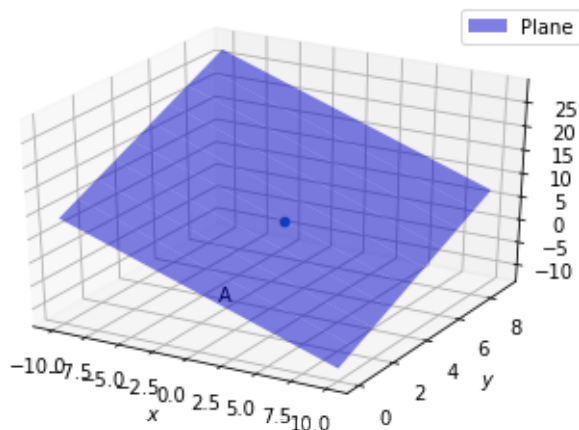$$\begin{pmatrix} 1 & -2 & 1 \end{pmatrix} \mathbf{x} = -1 \qquad (2.0.3)$$

Plot of the plane

Fig. 2.1: Plot of the plane