ASSIGNMENT-5

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Download all python codes from

https://github.com/unnatigupta2320/Assignment_5/blob/master/codes.py

and latex-tikz codes from

https://github.com/unnatigupta2320/Assignment_5

1 Question No-2.104

Find the equation of the plane which is at a distance of 7 units from the origin and normal to $\mathbf{n} = \begin{pmatrix} 3 \\ 5 \\ -6 \end{pmatrix}$

2 Solution

Given that,

- The normal vector to the plane is $\mathbf{n} = \begin{pmatrix} 3 \\ 5 \\ -6 \end{pmatrix}$.
- The distance from origin d=7 units,

$$d = \frac{|c|}{\|\mathbf{n}\|} \tag{2.0.1}$$

$$c = d \times \|\mathbf{n}\| \tag{2.0.2}$$

$$c = 7 \times \sqrt{3^2 + 5^2 + (-6)^2} \tag{2.0.3}$$

$$c = 7 \times \sqrt{70} \tag{2.0.4}$$

$$c = 58.56 \tag{2.0.5}$$

- So,Equation of the plane is given by:-

$$\mathbf{n}^T \mathbf{x} = c \tag{2.0.6}$$

$$\begin{pmatrix} 3 & 5 & -6 \end{pmatrix} \mathbf{x} = 58.56 \tag{2.0.7}$$

- Plot of the plane :-

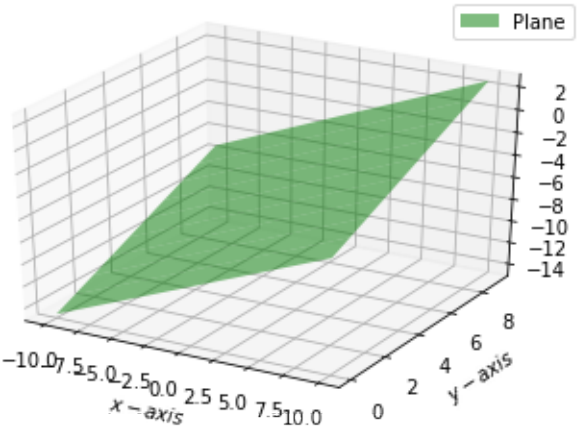

Fig. 2.1: Plot of the plane