

# ASSIGNMENT-5

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Download all python codes from

[https://github.com/unnatigupta2320/Assignment\\_5/blob/master/codes.py](https://github.com/unnatigupta2320/Assignment_5/blob/master/codes.py)

and latex-tikz codes from

[https://github.com/unnatigupta2320/Assignment\\_5](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,

$$d = \frac{|c|}{\|\mathbf{n}\|} \quad (2.0.1)$$

$$c = d \times \|\mathbf{n}\| \quad (2.0.2)$$

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

$$c = 7\sqrt{70} \quad (2.0.4)$$

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

$$\mathbf{n}^T \mathbf{x} = c \quad (2.0.5)$$

$$\begin{pmatrix} 3 & 5 & -6 \end{pmatrix} \mathbf{x} = 7\sqrt{70} \quad (2.0.6)$$

- Plot of the plane :-

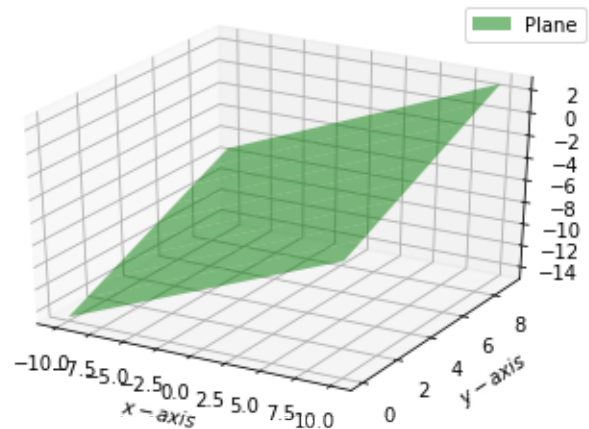


Fig. 2.1: Plot of the plane