GEOMETRY

Shristy Sharma (EE22BNITS11001)

1 PROBLEM 1

1. Find the equation of the plane with an intercept 3 on the Y-axis and parallel to ZOX- Plane.

SOLUTION:

Any plane parallel to ZOX is of the form $y = a$ since the y- intercept of the plane is 3.

Equation of the plane is given by,

$$\mathbf{n}^\top \mathbf{x} = c \qquad (1.0.1)$$

$$\begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}^\top \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0 \\ 3 \\ 0 \end{pmatrix} \qquad (1.0.2)$$

$$\begin{pmatrix} 0 & 1 & 0 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 0 \\ 3 \\ 0 \end{pmatrix} \qquad (1.0.3)$$
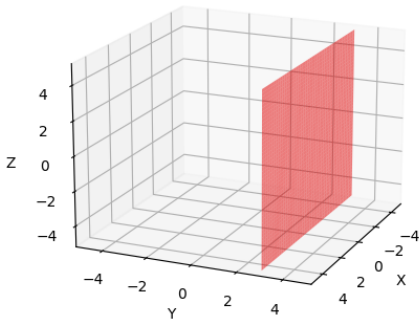
Thus, the equation of the required plane is $y = 3$

Fig. 0: plane with intercept 3 on Y-axis