Assignment 2

Namrata Mishra,EE21MTECH14023

vector

Abstract—This assignment deals with basic linear form.

Download all python codes from

https://github.com/NamrataMishra97/Assignment
−1−EE5600

and latex codes from

https://www.overleaf.com/project/614345
a6bf02a0749cba133f

Problem

Vector-2, Example-1, Question-20

Find the equation to the straight line cutting off an intercept 2 from the negative direction of the axis of Y and inclined at 30° to the X-axis.

Solution:

$$m = \tan\theta = \frac{1}{\sqrt{3}}, c = -2 \qquad (0.0.1)$$

The direction vector of the line is

$$\mathbf{m} = \begin{pmatrix} 1 \\ m \end{pmatrix} \implies \mathbf{m} = \begin{pmatrix} 1 \\ \frac{1}{\sqrt{3}} \end{pmatrix} \qquad (0.0.2)$$

The normal vector of the line is

$$\mathbf{n} = \begin{pmatrix} \frac{-1}{\sqrt{3}} \\ 1 \end{pmatrix} \qquad (0.0.3)$$

Equation of the line is

$$\mathbf{n}^T \mathbf{x} = c \qquad (0.0.4)$$

$$\begin{pmatrix} \frac{-1}{\sqrt{3}} & 1 \end{pmatrix} \mathbf{x} = -2 \qquad (0.0.5)$$

$$\begin{pmatrix} -1 & \sqrt{3} \end{pmatrix} \mathbf{x} = -2\sqrt{3} \qquad (0.0.6)$$