Assignment 3

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Vector

***Abstract*—This document contains the solution to find the area of a triangle, from the given coordinates of the vertices.**

Download all python codes from

https://github.com/AP1920/Assignment−3/blob/main/Assignment%202.ipynb

Download latex-tikz codes from

https://github.com/AP1920/Assignment−3/blob/main/main.tex

1 Problem

1.1 Vector 2, Example-5,11

Trace the straight lines whose equations is

$$x + 2y + 3 = 0 \tag{1.1.1}$$

2 Solution

The above equation can be written as

$$\begin{pmatrix} 1 & 2 \end{pmatrix} \mathbf{x} = -3 \tag{2.0.1}$$

$$\begin{pmatrix} \frac{1}{2} & 1 \end{pmatrix} \mathbf{x} = -3 \tag{2.0.2}$$

Comparing it with the equation of line which is

$$\mathbf{n}^T \mathbf{x} = c \tag{2.0.3}$$

We get

$$\mathbf{n} = \begin{pmatrix} \frac{1}{2} \\ 1 \end{pmatrix} \tag{2.0.4}$$

$$c = \frac{-3}{2} \tag{2.0.5}$$

The direction vector of the line

$$\mathbf{m} = \begin{pmatrix} 1 \\ \frac{-1}{2} \end{pmatrix} \tag{2.0.6}$$

So, the slope will be

$$m = \frac{-1}{2} \tag{2.0.7}$$

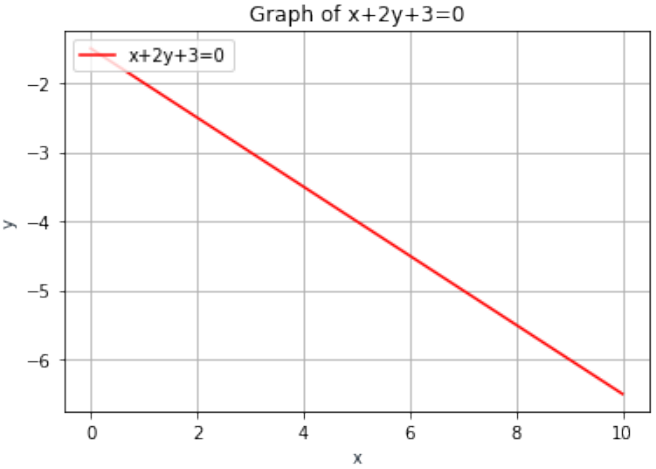

Fig. 1: Plot obtained from Python code