

EE5600 Assignment 2

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Abstract—This document contains the solution to a Equation of the lines problem.

Download all python and latex codes from
https://github.com/venky-p/EE5600/Assignment_2

By Substituting (2.1.8) in (2.1.6), We get the Line 2 equation

$$(1 \quad -1)\mathbf{x} = 3 \quad (2.1.9)$$

1 PROBLEM

Problem Set: Vector2, Example V, Problem 8

1.1. Find the equations to the straight lines which pass through the point $\begin{pmatrix} 1 \\ -2 \end{pmatrix}$ and cut off equal distances from the two axes.

2 SOLUTION

Given: Line passes through

$$x_0 = \begin{pmatrix} 1 \\ -2 \end{pmatrix} \quad (2.1.1)$$

Line 1:

$$(1 \quad 1)\mathbf{x} = a \quad (2.1.2)$$

We know that, Line passes through (2.1.1),

$$(1 \quad 1)\begin{pmatrix} 1 \\ -2 \end{pmatrix} = a \quad (2.1.3)$$

$$\Rightarrow a = -1 \quad (2.1.4)$$

By Substituting (2.1.4) in (2.1.2), We get the Line 1 equation

$$(1 \quad 1)\mathbf{x} = -1 \quad (2.1.5)$$

Line 2:

$$(1 \quad -1)\mathbf{x} = a \quad (2.1.6)$$

We know that, Line passes through (2.1.1),

$$(1 \quad -1)\begin{pmatrix} 1 \\ -2 \end{pmatrix} = a \quad (2.1.7)$$

$$\Rightarrow a = 3 \quad (2.1.8)$$

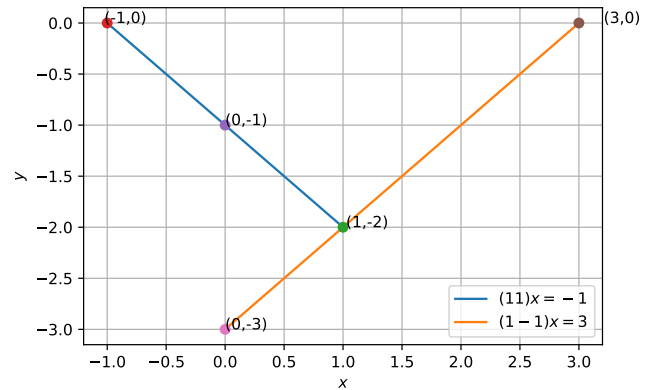


Fig. 2.1: Plot obtained from Python code

(2.1.5) and (2.1.9) are the equations of the lines passes through $\begin{pmatrix} 1 \\ -2 \end{pmatrix}$ and cut off equal distances from the two axes. Fig. (2.1) is the plot of the Lines