EE5600 Assignment 3

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***Abstract*—This document contains the solution of linear algebra through the concept of Matrix Theory.**

Download latex and python codes from

https://github.com/abhishekt711/EE5600/tree/master/Assignment_4

1 Problem

Verify whether the following are zeroes of the polynomial, indicated against them. $p(x) = x^2 - 1, x = 1, -1$

2 Explanation

Given Equation can be written as:

$$\mathbf{x}^T \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \mathbf{x} + \begin{pmatrix} 0 & 0 \end{pmatrix} \mathbf{x} - 1 = 0 \tag{2.0.1}$$

For, x=-1 Thus,

$$\begin{pmatrix} -1 & 0 \end{pmatrix}^T \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} -1 & 0 \end{pmatrix} + \begin{pmatrix} 0 & 0 \end{pmatrix} \begin{pmatrix} -1 & 0 \end{pmatrix} - 1 = 0 \tag{2.0.2}$$

$\therefore x = -1$ is the root of the given polynomial. For, x=1 Thus,

$$\begin{pmatrix} 1 & 0 \end{pmatrix}^T \begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} 1 & 0 \end{pmatrix} + \begin{pmatrix} 0 & 0 \end{pmatrix} \begin{pmatrix} -1 & 0 \end{pmatrix} - 1 = 0 \tag{2.0.3}$$

$\therefore x = 1$ is the root of the given polynomial.
Hence, -1 and 1 are the zeros of the given polynomial.
The following python code computes roots of the quadratic equation represented in Fig. 0.

./codes/Assignment_4.py

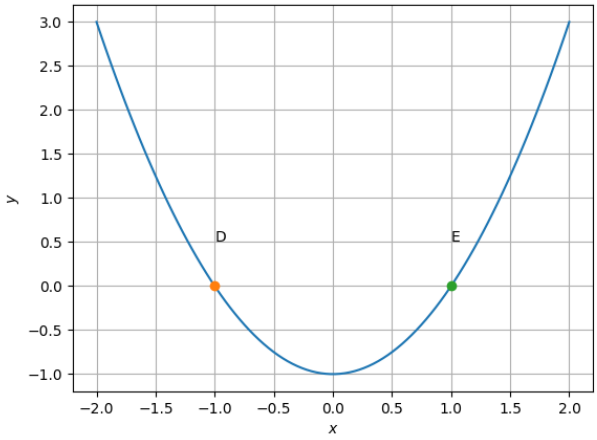

Fig. 0