Assignment 1

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***Abstract*—This document explains the concept of unit vector by solving a problem.**

Download all python codes from

https://github.com/Adarsh1310/EE5609/tree/master/codes

and latex-tikz codes from

https://github.com/Adarsh1310/EE5609

1 Problem

Find the value of x for which $x\begin{pmatrix}1\\1\\1\end{pmatrix}$ is a unit vector.

2 Explanation

A unit vector is a vector which has a magnitude equal to 1.

1 Multiply the scalar value with the given vector.

$$x\begin{pmatrix}1\\1\\1\end{pmatrix}=\begin{pmatrix}x\\x\\x\end{pmatrix}$$

2 Calculate the magnitude of the resultant vector. Magnitude of vector should be 1

$\|\mathbf{x}\| = 1($

$3Solvefor x.$

$\sqrt{3x^2}=1$

3 Solution

Solving the equation:

$\sqrt{3x^2}=1$

The solution comes to be x=1/ $\sqrt{3}$ and -1/ $\sqrt{3}$