Assignment 1

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vector

Abstract—**This document contains the solution to find Internally and externally divided coordinate points.**

Download all python codes from

https://github.com/StanzinYangdol/EE5600/tree/master/Assignment1

and latex codes from

https://github.com/StanzinYangdol/EE5600/Assignment1

Problem

Vector-2, Example-1, Question-19

The line joining the points the points (1,2) and (-3,-40 is trisected; find the coordinates of the points of trisection?

Solution:

let A(1,-2) ans B(-3,4) is trisected by point P and Q, Q divides AB in 2:1. The coordinates of point when (x1,y1) and (x2,y2) are divided in m:n ratio internally is

(mx2+nx1/m+n,my2+ny1/m+n)

$$let the coordinates of Q be (h,k) \tag{0.0.1}$$

$$\mathbf{h} = \begin{pmatrix} -5 \\ 2 \end{pmatrix} \tag{0.0.2}$$

$$\mathbf{k} = \begin{pmatrix} 2 \end{pmatrix} \tag{0.0.3}$$

$$\implies \mathbf{-5/3, 2} \tag{0.0.4}$$

Let P Divides AQ in 1:1

1) **Let the coordinates of P be (a,b)**

$$\mathbf{a} = \begin{pmatrix} -1 \\ 3 \end{pmatrix} \tag{0.0.5}$$

$$\mathbf{b} = \begin{pmatrix} 0 \end{pmatrix} \tag{0.0.6}$$

$$\implies \mathbf{(-1/3, 0)} \tag{0.0.7}$$

a) **so, the coordinates of Point of trisection are (-1/3) and (-5/3,2)**

Result

Plot of coordinate of the points obtained from Python code is shown below.

plot.png

Fig. 1: Plot of coordinate