ASSIGNMENT 1

Valli Devi Bolla

Download all python codes from

https://github.com/Vallidevibolla/bolla/blob/main/Collinear.py

and latex-tikz codes from

https:// github.com/Vallidevibolla/bolla/blob/main/main.tex

1 Question No.14

Find the value of k,if the points $\begin{pmatrix} k \\ 3 \end{pmatrix}$, $\begin{pmatrix} 6 \\ -2 \end{pmatrix}$ and $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$ are collinear.

2 Solution

Let

$$\mathbf{A} = \begin{pmatrix} k \\ 3 \end{pmatrix} \tag{2.0.1}$$

$$\mathbf{B} = \begin{pmatrix} 6 \\ -2 \end{pmatrix} \tag{2.0.2}$$

$$\mathbf{C} = \begin{pmatrix} -3 \\ 4 \end{pmatrix} \tag{2.0.3}$$

As,given that the points are collinear,

$$\begin{pmatrix} 6 & -2 \\ -3 & 4 \\ k & 3 \end{pmatrix} \longleftrightarrow \begin{pmatrix} 6 & -2 \\ 0 & 6\times 4 - [(-3)\times(-2)] \\ 0 & 6\times 3 - [k\times(-2)] \end{pmatrix} \tag{2.0.4}$$

$$\rightarrow \begin{pmatrix} 6 & -2 \\ 0 & 18 \\ 0 & 18+2k \end{pmatrix} \tag{2.0.5}$$

$$\implies 18 + 2k = 0 \tag{2.0.6}$$

$$\implies k = -9 \tag{2.0.7}$$

$\therefore$ Finally the value k calculated by using row reduction approach is -9

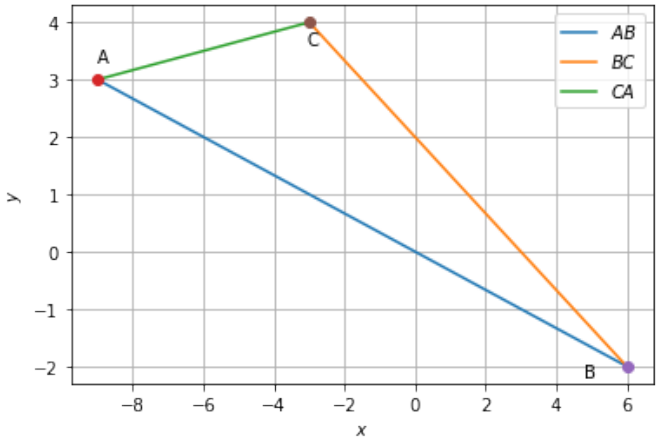

Fig. 0: collinear