ASSIGNMENT 1

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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,

$$\frac{1}{2}\begin{vmatrix} 1 & 1 & 1 \\ A & B & C \end{vmatrix} = 0 \tag{2.0.4}$$

$$\implies \begin{vmatrix} 1 & 1 & 1 \\ k & 6 & -3 \\ 3 & -2 & 4 \end{vmatrix} = 0 \tag{2.0.5}$$

$$\implies -6K - 9 = 0 \tag{2.0.6}$$

$$\implies k = -3/2 \tag{2.0.7}$$

$\therefore$ Finally the value of k is $\frac{-3}{2}$

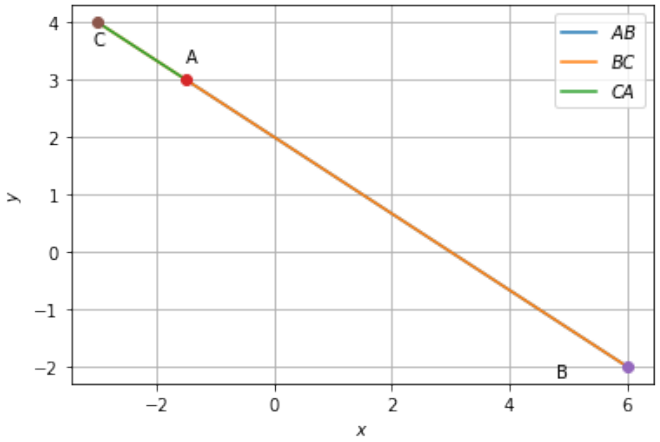

Fig. 0: collinear