

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

$$\mathbf{A} = \begin{pmatrix} k \\ 3 \end{pmatrix} \quad (2.0.1)$$

$$\mathbf{B} = \begin{pmatrix} 6 \\ -2 \end{pmatrix} \quad (2.0.2)$$

$$\mathbf{C} = \begin{pmatrix} -3 \\ 4 \end{pmatrix} \quad (2.0.3)$$

As, given that the points are collinear,

$$\begin{pmatrix} 6 & -2 \\ -3 & 4 \\ k & 3 \end{pmatrix} \quad (2.0.4)$$

$$\frac{1}{2} \begin{vmatrix} 1 & 1 & 1 \\ A & B & C \end{vmatrix} = 0 \quad (2.0.5)$$

$$\Rightarrow \begin{vmatrix} 1 & 1 & 1 \\ k & 6 & -3 \\ 3 & -2 & 4 \end{vmatrix} = 0 \quad (2.0.6)$$

$$\Rightarrow -6K - 9 = 0 \quad (2.0.7)$$

$$\Rightarrow k = -3/2 \quad (2.0.8)$$

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

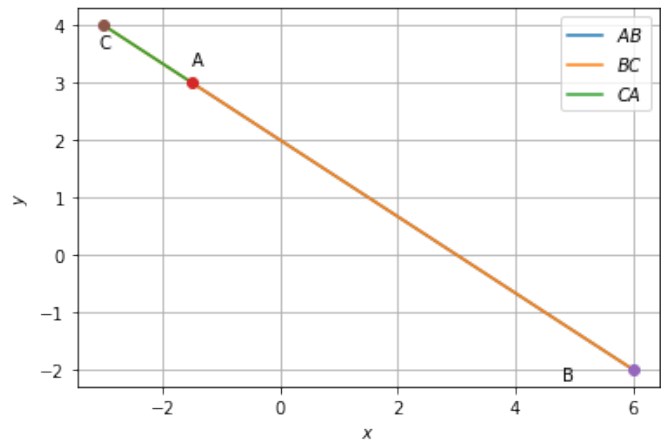


Fig. 0: collinear