

1.1.7.2

EE24BTECH11039 - Mandala Ranjith

Question:x

The points $(1, 2)$, $(0, 0)$ and $(a, 6)$ are collinear

Solution:

Symbol	Value	Description
A	$\begin{pmatrix} 4 \\ 3 \end{pmatrix}$	Point A
B	$\begin{pmatrix} 0 \\ 0 \end{pmatrix}$	Point B
C	$\begin{pmatrix} a \\ 6 \end{pmatrix}$	Point C
M	$\begin{pmatrix} \mathbf{A} - \mathbf{B} & \mathbf{C} - \mathbf{B} \end{pmatrix}$	

TABLE 0

Performing row operation on **M**

$$\mathbf{M}' = \begin{pmatrix} 1 & a \\ 0 & 6 - 2a \end{pmatrix} \quad (0.1)$$

for **A**, **B**, **C** to be collinear,

$$\text{rank}(\mathbf{M}) = 1 \quad (0.2)$$

$$6 - 2a = 0 \quad (0.3)$$

$$a = 3 \quad (0.4)$$

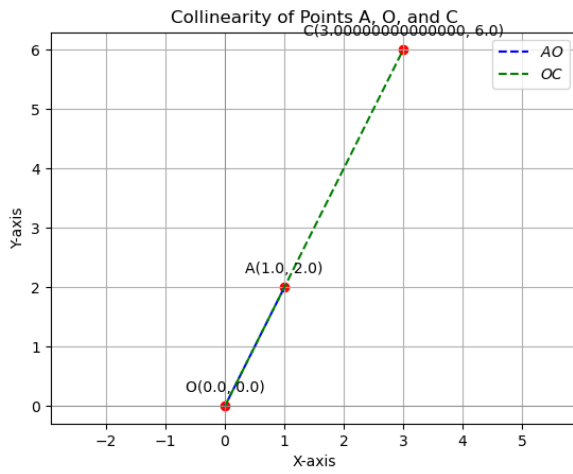


Fig. 0.1