Assignment 2

Priyanka - EE21MTECH12002

Download all python codes from

https://github.com/PeriPriyanka/Vectors_ass/Assignment2/code

and latex-tikz codes from

https://github.com/PeriPriyanka/Vectors_ass/Assignment2

1 Problem

(vectors 2.11) Find a condition on x such that the points given are collinear.

$$\mathbf{x}, \begin{pmatrix}1\\2\end{pmatrix}, \begin{pmatrix}7\\0\end{pmatrix} \tag{1.0.1}$$

2 Solution

Consider the given vectors A,B.

$$\mathbf{A} = \begin{pmatrix}1\\2\end{pmatrix}, \mathbf{B} = \begin{pmatrix}7\\0\end{pmatrix} \tag{2.0.1}$$

The parametric equation of the line is

$$\mathbf{x} = \mathbf{A} + \lambda\mathbf{m} \tag{2.0.2}$$

where m is the direction vector and it is defined as

$$\mathbf{m} = (\mathbf{B} - \mathbf{A}) = \begin{pmatrix}6\\-2\end{pmatrix} \tag{2.0.3}$$

Substituting all the values in the equation (2.0.2), we get

$$\mathbf{x} = \begin{pmatrix}1\\2\end{pmatrix} + \lambda\begin{pmatrix}6\\-2\end{pmatrix} \tag{2.0.4}$$

where λ is any real valued number
The collinear line is shown in the Fig.0

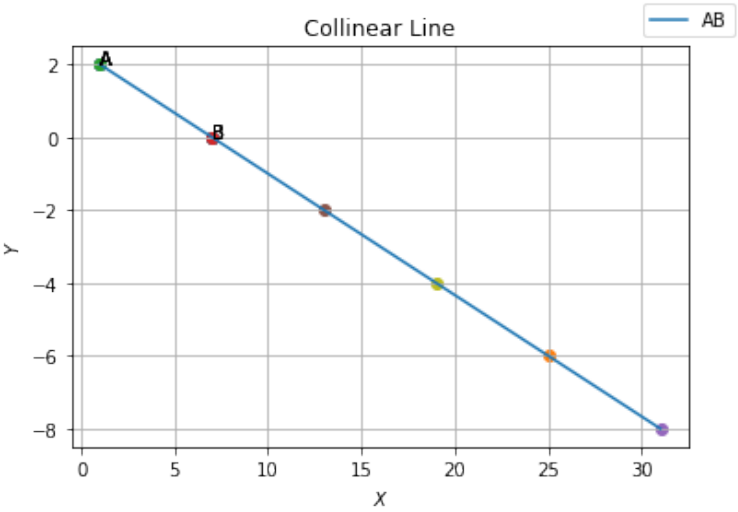

Fig. 0: Plot of the Collinear Line.