Assignment 4

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Download all python codes from

https://github.com/AnilMondedla/Python/Assignment_4

and latex-tikz codes from

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1 Linear forms Q:2.1

Question : Check which of the following are solutions of the equation

$$\begin{pmatrix}1 & -2\end{pmatrix}\mathbf{x} = 4 \tag{1.0.1}$$

1) $\begin{pmatrix}0\\2\end{pmatrix}$

2) $\begin{pmatrix}2\\0\end{pmatrix}$

3) $\begin{pmatrix}4\\0\end{pmatrix}$

4) $\begin{pmatrix}\sqrt{2}\\4\sqrt{2}\end{pmatrix}$

5) $\begin{pmatrix}1\\1\end{pmatrix}$

2 Solution

(1)

$$\mathbf{x} = \begin{pmatrix}0\\2\end{pmatrix} \tag{2.0.1}$$

$$\begin{pmatrix}1 & -2\end{pmatrix}\begin{pmatrix}0\\2\end{pmatrix} = 4 \tag{2.0.2}$$

$$-4 \neq 4 \tag{2.0.3}$$

(2)

$$\mathbf{x} = \begin{pmatrix}2\\0\end{pmatrix} \tag{2.0.4}$$

$$\begin{pmatrix}1 & -2\end{pmatrix}\begin{pmatrix}2\\0\end{pmatrix} = 4 \tag{2.0.5}$$

$$2 \neq 4 \tag{2.0.6}$$

(3)

$$\mathbf{x} = \begin{pmatrix}4\\0\end{pmatrix} \tag{2.0.7}$$

$$\begin{pmatrix}1 & -2\end{pmatrix}\begin{pmatrix}4\\0\end{pmatrix} = 4 \tag{2.0.8}$$

$$4 = 4 \tag{2.0.9}$$

(4)

$$\mathbf{x} = \begin{pmatrix}\sqrt{2}\\4\sqrt{2}\end{pmatrix} \tag{2.0.10}$$

$$\begin{pmatrix}1 & -2\end{pmatrix}\begin{pmatrix}\sqrt{2}\\4\sqrt{2}\end{pmatrix} = 4 \tag{2.0.11}$$

$$-7\sqrt{2} \neq 4 \tag{2.0.12}$$

(5)

$$\mathbf{x} = \begin{pmatrix}1\\1\end{pmatrix} \tag{2.0.13}$$

$$\begin{pmatrix}1 & -2\end{pmatrix}\begin{pmatrix}1\\1\end{pmatrix} = 4 \tag{2.0.14}$$

$$-1 \neq 4 \tag{2.0.15}$$

Here, $\begin{pmatrix}4\\0\end{pmatrix}$ is the solution of the given equation.

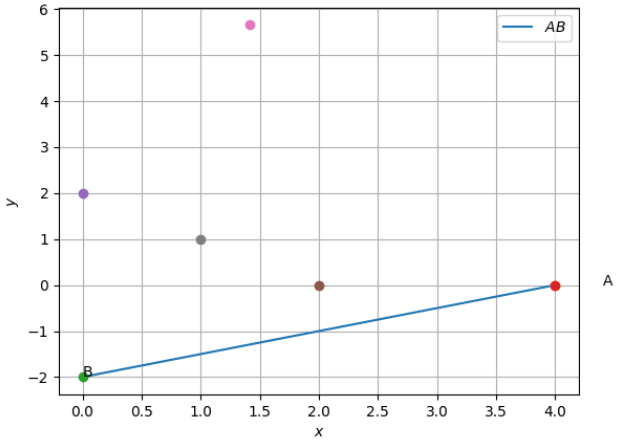

Fig. 5: Line