ASSIGNMENT

Find the python code from below link

https://raw.githubusercontent.com/TGURUBALAJI/
INTERNSHIP−IITH/main/Assignment%20−3/
code.py

Find the Latex code from below link

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code.py

1 QUESTION NO-3

$\left(-3, -2\right)$ and $\left(-6, 7\right)$, the axes being inclined at $60°$.

Fig. 0: $transformed\ lines$

Solution : A$=\begin{pmatrix} -3 \\ -2 \end{pmatrix}$, B $=\begin{pmatrix} -6 \\ 7 \end{pmatrix}$

axes being incline at $60°$ formula for linear transformation from angular coordinates $X = PX_n$

where X = coordinates in linear coordinates (1.0.1)

X_n = Angular coordinates (1.0.2)

$$P = \begin{pmatrix} 1 & cos(theta) \\ 0 & sin(theta) \end{pmatrix}$$

$$A = \begin{pmatrix} 1 & cos(60°) \\ 0 & sin(60°) \end{pmatrix} \begin{pmatrix} -3 \\ -2 \end{pmatrix}$$

$$A = \begin{pmatrix} -3 - 2cos(60°) \\ -2sin(60°) \end{pmatrix}$$

$$B = \begin{pmatrix} 1 & cos(60°) \\ 0 & sin(60°) \end{pmatrix} \begin{pmatrix} -6 \\ 7 \end{pmatrix}$$

$$B = \begin{pmatrix} -6 + 7cos(60°) \\ 7sin(60°) \end{pmatrix}$$

distance between two points is given by

$$A\text{-}B = \begin{pmatrix} -3 - 2cos(60°) \\ -2sin(60°) \end{pmatrix} - \begin{pmatrix} -6 + 7cos(60°) \\ 7sin(60°) \end{pmatrix}$$

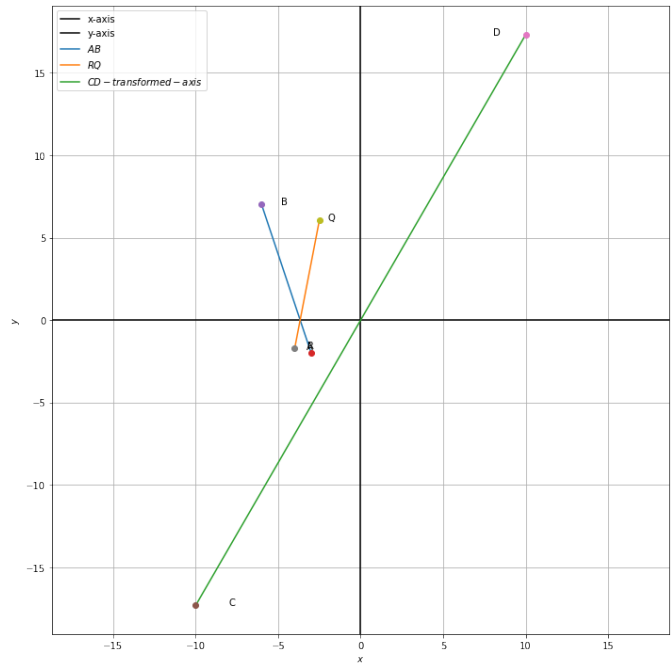$$A\text{-}B = \begin{pmatrix} 3 - 9cos(60°) \\ -9sin(60°) \end{pmatrix}$$

$$\|A-B\| = \sqrt{\begin{pmatrix} 3 - 9cos60° & -9sin60° \end{pmatrix} \begin{pmatrix} 3 - 9cos(60°) \\ -9sin(60°) \end{pmatrix}}$$

$$\|A - B\| = \sqrt{(3 - 9cos60°)^2 + (-9sin60°)^2}$$

$$\|A-B\| = \sqrt{9 + 81cos^2 60° - 54cos60 + 81sin^2 60°}$$

$$\|A - B\| = \sqrt{9 + 81 - 54cos60}$$

$$\|A - B\| = \sqrt{90 - 27}$$

$$\|A - B\| = \sqrt{63}$$

$$\|A - B\| = 7.9372$$

distance between two points is 7.9372 .