

# Assignment 2

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Download all python codes from

<https://github.com/KeshavRoy/Distance>

and latex-tikz codes from

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## 1 PROBLEM

Vectors2 (1.3) Find the distance between the following pairs of points:

$(-3 -2)$  and  $(-6 7)$  the axes being inclined at 60 degree

## 2 SOLUTION

Given:

$$\mathbf{A} = \begin{pmatrix} -3, \\ -2 \end{pmatrix} \quad (2.0.1)$$

$$\mathbf{B} = \begin{pmatrix} -6, \\ -7 \end{pmatrix} \quad (2.0.2)$$

$$\theta = 60 \quad (2.0.3)$$

$$d = \|\mathbf{A} - \mathbf{B}\| \quad (2.0.4)$$

$$\mathbf{A} = \begin{pmatrix} -3 - 2\cos 60 \\ -2\sin 60 \end{pmatrix} = \begin{pmatrix} -4 \\ \sqrt{3} \end{pmatrix} \quad (2.0.5)$$

$$\mathbf{B} = \begin{pmatrix} -6 + 7\cos 60 \\ 7\sin 60 \end{pmatrix} = \begin{pmatrix} -\frac{5}{2} \\ \frac{\sqrt{3}}{2}7 \end{pmatrix} \quad (2.0.6)$$

Now distance AB is:

$$d = \|\mathbf{A} - \mathbf{B}\| \quad (2.0.7)$$

$$\left\| \begin{pmatrix} -4 + \frac{5}{2} \\ -\sqrt{3} - \frac{\sqrt{3}}{2}7 \end{pmatrix} \right\| = \left\| \begin{pmatrix} -\frac{3}{2} \\ -\frac{\sqrt{3}}{2}9 \end{pmatrix} \right\| \quad (2.0.8)$$

$$d = \sqrt{63} \quad (2.0.9)$$

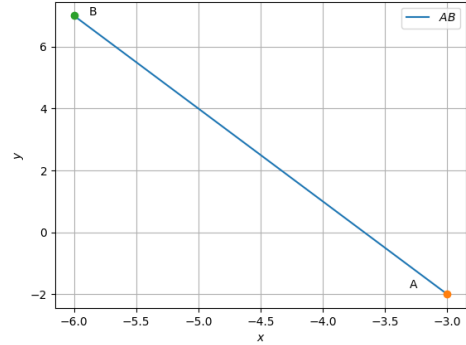


Fig. 0: line