Assignment 3

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Download all python codes from

https://github.com/KeshavRoy/Distance

and latex-tikz codes from

https://github.com/KeshavRoy/Distance

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:

$$\mathbf{A} = \begin{pmatrix} -3, \\ -2 \end{pmatrix} \tag{2.0.1}$$

$$\mathbf{B} = \begin{pmatrix} -6, \\ -7 \end{pmatrix} \tag{2.0.2}$$

$$\theta = 60 \tag{2.0.3}$$

$$d = \|A - B\| \tag{2.0.4}$$

$$\mathbf{A} = \begin{pmatrix} -3 - 2cos60 \\ -2sin60 \end{pmatrix} = \begin{pmatrix} -4 \\ \sqrt{3} \end{pmatrix} \tag{2.0.5}$$

$$\mathbf{B} = \begin{pmatrix} -6 + 7cos60 \\ 7sin60 \end{pmatrix} = \begin{pmatrix} \frac{-5}{2} \\ \frac{\sqrt{3}}{2}7 \end{pmatrix} \tag{2.0.6}$$

Now distance AB is:

$$d = \|A - B\| \tag{2.0.7}$$

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

$$d = \sqrt{63} \tag{2.0.9}$$

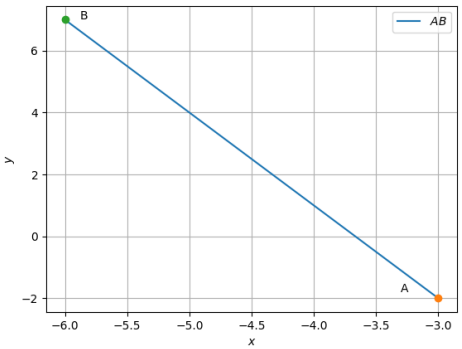

Fig. 0: line