Assignment 1

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Solution:

$$\mathbf{P} = \begin{pmatrix} 7 \\ 6 \end{pmatrix}$$

$$\mathbf{Q} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$$

A vector on the X-axis $\mathbf{X}$ is equidistant to both $\mathbf{P}$ and $\mathbf{Q}$.

Need to find k.

Let $\mathbf{X} = \mathrm{k}\begin{pmatrix} 1 \\ 0 \end{pmatrix}$ be the vector on the X-axis.

$$\implies \begin{pmatrix} 1 & 0 \end{pmatrix} \mathbf{X} = k$$

$$\implies \mathbf{X} = \frac{\mathbf{P} + \mathbf{Q}}{2}$$

$$\implies \mathbf{X} = \frac{\begin{pmatrix} 7 \\ 6 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix}}{2}$$

$$\implies \mathbf{X} = \begin{pmatrix} 5 \\ 5 \end{pmatrix}$$

$$\implies \begin{pmatrix} 1 & 0 \end{pmatrix} \mathbf{X} = \begin{pmatrix} 1 & 0 \end{pmatrix} \begin{pmatrix} 5 \\ 5 \end{pmatrix}$$

$$\implies k = 5 \quad i.e. \quad \mathbf{X} = \begin{pmatrix} 5 \\ 0 \end{pmatrix}$$

Plot

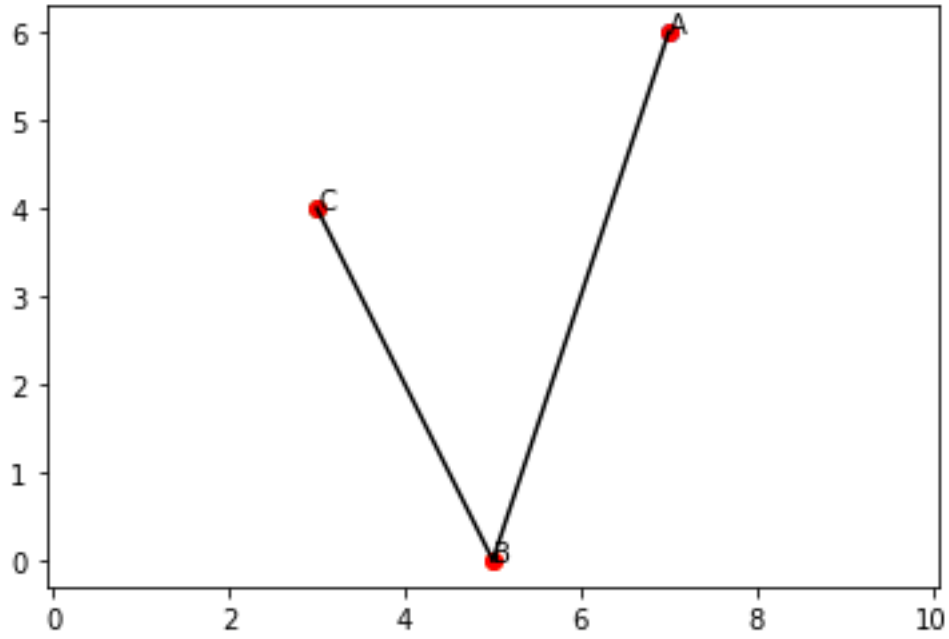

Figure 1: Plot representing the Points