Assignment 1

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Solution:

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

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

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

Need to find k.

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

$$\implies (1 \quad 0) \ \vec{X} = k$$

Also, $\vec{X} = \frac{\vec{P} + \vec{Q}}{2}$

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

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

$$\implies (1 \quad 0) \vec{X} = (1 \quad 0) \begin{pmatrix} 5 \\ 5 \end{pmatrix}$$

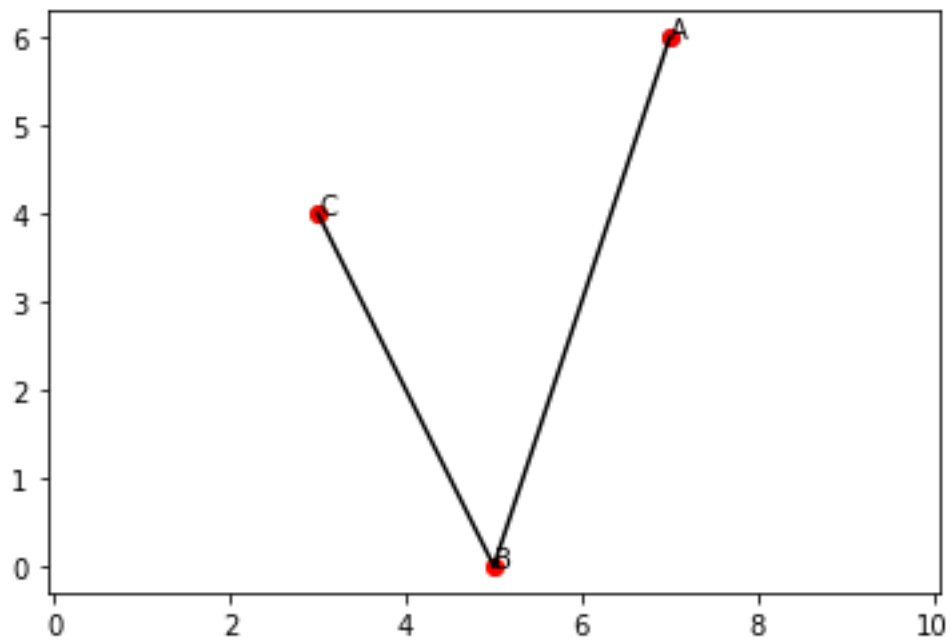$\implies k = 5$

$Therefore, \ \vec{X} \ = \ \begin{pmatrix} 5 \\ 0 \end{pmatrix}$

Plot

Figure 1: Plot representing the Points