Line Assignment

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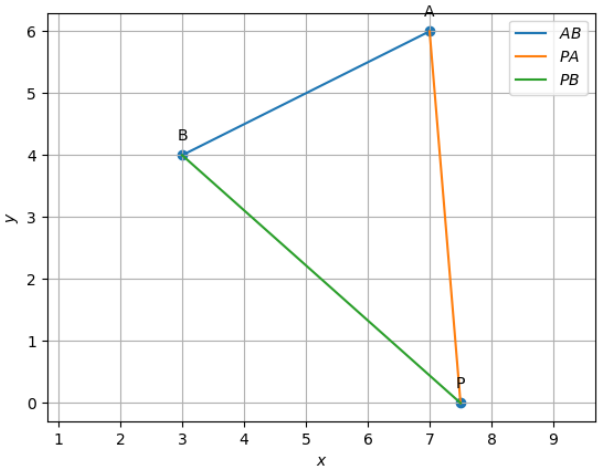
***Problem Statement* - Find a point on the x-axis,which is equidistant from the points** $\begin{pmatrix}7\\6\end{pmatrix}$ **and** $\begin{pmatrix}3\\4\end{pmatrix}$

1. finding the point on x-axis which is equidistant from the points

$$49 + x^2 - 14x + 20 = 9 + x^2 - 6x$$
$$60 = 8x$$
$$x = 60/8$$
$$x = 7.5$$



Solution

Given points A=$\begin{pmatrix}7\\6\end{pmatrix}$ and B=$\begin{pmatrix}3\\4\end{pmatrix}$

if the point is lying on x-axis then y-axis will be zero i.e.. y=0

Distance between the points $\begin{pmatrix}7\\6\end{pmatrix}$ and $\begin{pmatrix}x\\0\end{pmatrix}$= Distance between the points $\begin{pmatrix}3\\4\end{pmatrix}$ and $\begin{pmatrix}x\\0\end{pmatrix}$

Consider P on x-axis P$\begin{pmatrix}x\\0\end{pmatrix}$

$|AP|=|BP|$

A$\begin{pmatrix}7\\6\end{pmatrix}$ $|A_0|=\sqrt{(7-x)^2+(6-0)^2}$

B$\begin{pmatrix}3\\4\end{pmatrix}$ $|B_0|=\sqrt{(3-x)^2+(4-0)^2}$

$|A_0|=|B_0|$

$(7-x)^2 + 36 = (3-x)^2 + 16$

$(7-x)^2 + 20 = (3-x)^2$