ASSIGNMENT-1

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Question: Calculate the ratio in which the line joining A= $\begin{pmatrix}-4\\2\end{pmatrix}$ and B= $\begin{pmatrix}3\\6\end{pmatrix}$ is divided by the point P= $\begin{pmatrix}x^*\\3\end{pmatrix}$. Also find (1)$x^*$ (2) Length of $\overrightarrow{AP}$.

Solution: The ratio in which the line is divided by the point is 1:3.

1) Now lets form the line equation which is

$$\begin{pmatrix}-4 & 7\end{pmatrix}\begin{pmatrix}x\\y\end{pmatrix} = 30 \qquad (0.0.1)$$

Now by solving this equation for the point P=(x^*,3). We get,

$$\begin{pmatrix}-4 & 7\end{pmatrix}\begin{pmatrix}x^*\\3\end{pmatrix} = 30 \qquad (0.0.2)$$

Solving this we get the value of x^* = -9/4 (or) -2.25

2) The length of the line $\overrightarrow{AP}$ can be measured by the distance formula.

$$\sqrt[2]{(-4-(-2.25))^2+(2-3)^2}$$

The length of the line $\overrightarrow{AP}$ = 2.015(Approx).