Assignment 2

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Download python code from

https://github.com/Venkatasaidhilli/IITH/blob/main/Assignment2/code.py

and latex-tex code from

https://github.com/Venkatsai/IITH/blob/main/Assignment2/latex.tex

Question 2

Find the ratio in which the point (2,y) divides the line segment joining the points A(-2,2) and B(3,7). Also find the value of y

Solution:
Given two end points of a line
A = $\begin{pmatrix}-2\\2\end{pmatrix}$, B = $\begin{pmatrix}3\\7\end{pmatrix}$
Let the point p = $\begin{pmatrix}2\\y\end{pmatrix}$ divides the line AB in the ratio k:1.
By using section formula we get

$$P = \frac{kA + B}{k+1}$$

$$\begin{pmatrix}2\\y\end{pmatrix} = \begin{pmatrix}\frac{-2k+3}{k+1}\\\frac{2k+7}{k+1}\end{pmatrix} \tag{0.0.1}$$

$$\implies 2 = \frac{-2k+1}{k+1} \tag{0.0.2}$$

$$\implies y = \frac{2k+7}{k+1} \tag{0.0.3}$$

from equation (0.0.2) we get

$$2k + 2 = -2k + 1$$

$$\therefore k = \frac{1}{4}$$

Now ,substitute the value of K in the equation(0.0.3) we get:

$$y = \frac{2(1/4) + 7}{(1/4) + 1}$$

$$y = \frac{30}{5}$$

$$\implies y = 6$$

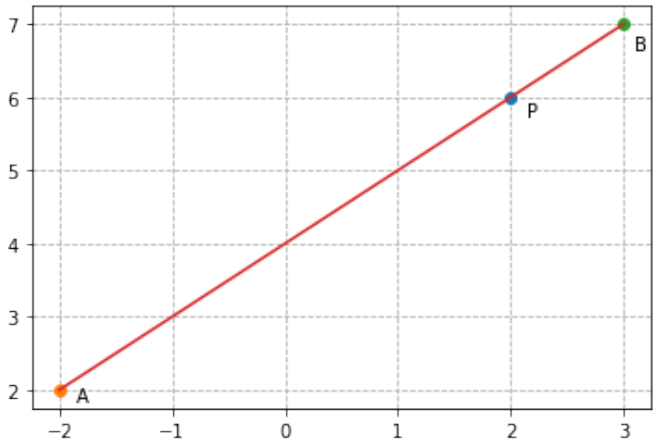

Fig. 0: plotted lineAB and point P on the graph