Question 1-1.5-31

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Question: Find the coordinates of a point P, which lies on the line segment joining the points $A(-2,2)$ and $B(2,-4)$ such that $AP = \frac{3}{7}AB$.

Solution: P divides AB in ratio $3:4$ i.e $1:\frac{4}{3}$

$$P = \frac{kA + B}{k+1} \tag{0.1}$$

$$= \frac{\frac{4}{3}\begin{pmatrix}-2\\2\end{pmatrix} + \begin{pmatrix}2\\-4\end{pmatrix}}{\frac{4}{3}+1} \tag{0.2}$$

$$= \frac{4\begin{pmatrix}-2\\2\end{pmatrix} + 3\begin{pmatrix}2\\-4\end{pmatrix}}{4+3} \tag{0.3}$$

$$= \frac{1}{7}\begin{pmatrix}-2\\-4\end{pmatrix} \tag{0.4}$$

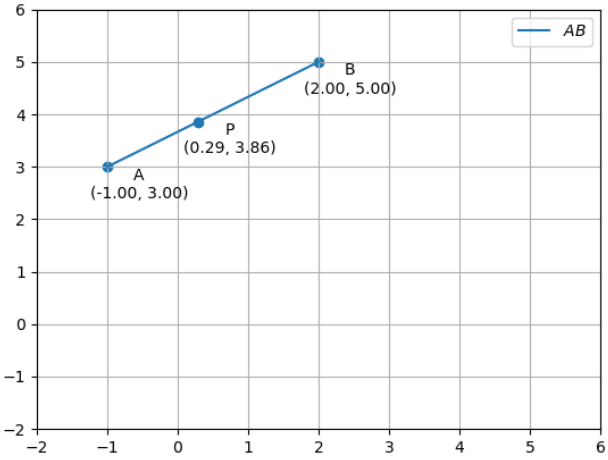

Fig. 0: A plot of all points

Code for this plot

Codes/section.py