ASSIGNMENT 1

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1 PROBLEM

The line joining the points (-6,8) and (8,-6) is divided into four equal parts; Find the coordinates of the points of section.

2 SOLUTION

We will be using matrix approach for calculating the coordinates of the points of section which is divided into four equal parts.

$$\begin{bmatrix} x1 \\ y1 \end{bmatrix} = \frac{1}{4} \begin{bmatrix} -6 & 8 \\ 8 & -6 \end{bmatrix} \begin{bmatrix} 3 \\ 1 \end{bmatrix} = \begin{bmatrix} -10/4 \\ 18/4 \end{bmatrix} = \begin{bmatrix} -5/2 \\ 9/2 \end{bmatrix}$$

Points x1,y1 divides line in ratio 3:1

$$\begin{bmatrix} x2 \\ y2 \end{bmatrix} = \frac{1}{2} \begin{bmatrix} -6 & 8 \\ 8 & -6 \end{bmatrix} \begin{bmatrix} 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 2/2 \\ 2/2 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

Points x2,y2 divides lines in ratio 1:1

$$\begin{bmatrix} x3 \\ y3 \end{bmatrix} = \frac{1}{4} \begin{bmatrix} -6 & 8 \\ 8 & -6 \end{bmatrix} \begin{bmatrix} 1 \\ 3 \end{bmatrix} = \begin{bmatrix} 18/4 \\ -10/4 \end{bmatrix} = \begin{bmatrix} 9/2 \\ -5/2 \end{bmatrix}$$

Points x3,y3 divides lines in ratio 1:3

3 CONCLUSION

The points (x1,y1) (x2,y2) (x3,y3) divides the lines into four parts in ratio (3:1) (1:1) (1:3). The points (x1,y1)=(-2.5,4.5) (x2,y2)=(1,1) (x3,y3)=(4.5,-2.5)

https://www.overleaf.com/project/6128ee907ed3661ebeed4bc8