

Assignment No.1

RajaSekhar Jala

Download all python codes from

<https://github.com/Sekharjala/Assignments/blob/main/code>

and pdf c from

<https://github.com/Sekharjala/Assignments/blob/main/Assignment1.pdf>

$$3y - 6x - y + 2x = 0 \quad (2.0.7)$$

$$y - 2x = 0 \quad (2.0.8)$$

$$\begin{pmatrix} -2 & 1 \end{pmatrix} \mathbf{x} = 0 \quad (2.0.9)$$

1 QUESTION NO.MATRICES 1.76.1

Question : Find equation of line joining (1,2) and (3,6) using determinants.

2 SOLUTION

To construct a line joining $\mathbf{A} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$ consider a point $\mathbf{C} = \begin{pmatrix} x \\ y \end{pmatrix}$ in vectorform and \mathbf{n} be the normal vector then

$$\mathbf{n}^T \times \mathbf{A} = 1 \quad (2.0.1)$$

$$\mathbf{n}^T \times \mathbf{B} = 1 \quad (2.0.2)$$

$$\mathbf{n}^T \times \mathbf{C} = 1 \quad (2.0.3)$$

augmented vector is

$$\begin{pmatrix} 1 & 1 & 1 \\ 1 & 3 & x \\ 2 & 6 & y \end{pmatrix}$$

Area Of ΔABC using determinant $\det(\Delta ABC) =$

$$\frac{1}{2} \times \begin{vmatrix} 1 & 1 & 1 \\ 1 & 3 & x \\ 2 & 6 & y \end{vmatrix} = 0 \quad (2.0.4)$$

Since A,B,C lie on same line

$$1 \begin{vmatrix} 3 & x \\ 6 & y \end{vmatrix} - 1 \begin{vmatrix} 1 & x \\ 2 & y \end{vmatrix} + 1 \begin{vmatrix} 1 & 3 \\ 2 & 6 \end{vmatrix} = 0 \quad (2.0.5)$$

$$1 \times (3y - 6x) - 1 \times (y - 2x) + 1 \times (6 - 6) = 0 \quad (2.0.6)$$

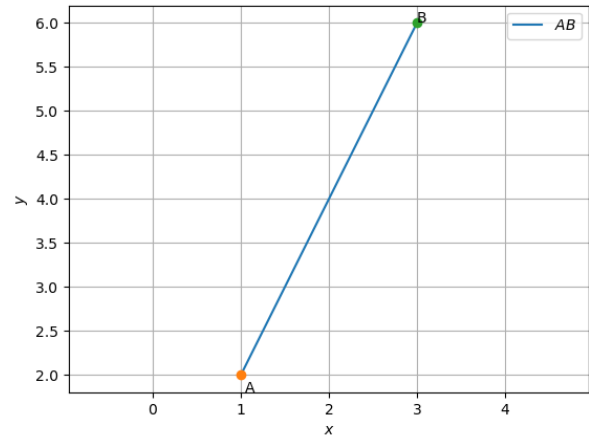


Fig. 0: line formed with points(1,2) and (3,6) using Python