Solution to problem 1.1.1

Aditya Vikram Singh*

Consider a triangle with vertices

$$\mathbf{A} = \begin{pmatrix} 1 \\ -1 \end{pmatrix} \tag{1}$$

$$\mathbf{B} = \begin{pmatrix} -4 \\ 6 \end{pmatrix} \tag{2}$$

$$\mathbf{C} = \begin{pmatrix} -3 \\ -5 \end{pmatrix} \tag{3}$$

Question1.1.1
The Direction Vector of AB is defined as

$$\mathbf{B} - \mathbf{A} \tag{4}$$

Find the Direction Vectors of AB,BC,CA.
Solution:

1) The Direction vector of AB is = B - A
$= \begin{pmatrix} -4-(1) \\ 6-(-1) \end{pmatrix} = \begin{pmatrix} -5 \\ 7 \end{pmatrix}$
2) The Direction vector of BC = C - B
$= \begin{pmatrix} -3-(-4) \\ -5-(6) \end{pmatrix} = \begin{pmatrix} 1 \\ -11 \end{pmatrix}$
3) The Direction vector of CA = A - C
$= \begin{pmatrix} 1-(-3) \\ -1-(-5) \end{pmatrix} = \begin{pmatrix} 4 \\ 4 \end{pmatrix}$

*The author is with the Department of Electrical Engineering, Indian Institute of Technology, Hyderabad 502285 India e-mail: gadepall@iith.ac.in.