Assignment

Antalene (EE22BTECH11008)

Question 1.5.4
Find the distance from **I** to BC.
Solution: the value of **I** from ... is

$$\mathbf{I} = \frac{1}{\sqrt{37} + 4 + \sqrt{61}} \begin{pmatrix} \sqrt{61} - 16 - 3\sqrt{37} \\ -\sqrt{61} + 24 - 5\sqrt{37} \end{pmatrix} \tag{1}$$

$$= \begin{pmatrix} -1.48 \\ -0.79 \end{pmatrix} \tag{2}$$

$$\tag{3}$$

Equation of BC from ... is

$$BC : \begin{pmatrix} 11 & 1 \end{pmatrix} \mathbf{x} = 50 \tag{4}$$

$$\tag{5}$$

Then, the distance between point **I** and line BC is

$$= \frac{\left| \begin{pmatrix} 11 & 1 \end{pmatrix} \mathbf{I} - 50 \right|}{\left\| \begin{pmatrix} 11 \\ 1 \end{pmatrix} \right\|} \tag{6}$$

$$= \frac{\left| \begin{pmatrix} 11 & 1 \end{pmatrix} \begin{pmatrix} -1.48 \\ -0.79 \end{pmatrix} - 50 \right|}{\sqrt{122}} \tag{7}$$

$$= \frac{|-67.07|}{\sqrt{122}} \tag{8}$$

$$= 6.072 \tag{9}$$