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## Quiz 4

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Abstract—This document contains the solution of the question from NCERT 12th standard chapter 10 exercise 10.2 problem 5

## 1 Exercise 10.2

1) Find the scalar and the vector component of the vector with initial point (2,1) and terminal point (-5,7).

Let the initial point be denoted by,

$$(I) = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

and the terminal point be denoted by,

$$(T) = \begin{bmatrix} -5\\7 \end{bmatrix}$$

The vector joining the two points is,

$$(T) - (I) = \begin{bmatrix} -5\\7 \end{bmatrix} - \begin{bmatrix} 2\\1 \end{bmatrix} = \begin{bmatrix} -7\\6 \end{bmatrix}$$
 (1.0.1)

The scalar component of the vector is,

$$\|(T) - (I)\| = \sqrt{(-7)^2 + 6^2} = \sqrt{85}$$
 (1.0.2)

The vector component of the vector is,

$$\begin{pmatrix} T \end{pmatrix} - \begin{pmatrix} I \end{pmatrix} = \begin{bmatrix} -7 \\ 6 \end{bmatrix} \tag{1.0.3}$$