

# 1.8.20

EE24BTECH11007 - Arnav Makarand Yadnopavit

Question:

Find the value of  $a$ , if the distance between the points  $\mathbf{A}(-3, -14)$  and  $\mathbf{B}(a, -5)$  is 9 units.

**Solution:** From Table 0

Point	Vector
A	$\begin{pmatrix} -3 \\ -14 \end{pmatrix}$
B	$\begin{pmatrix} a \\ -5 \end{pmatrix}$

TABLE 0: Given Values

The matrix

$$d = \|A - B\| = 9 \quad (0.1)$$

$$(A - B)^T (A - B) = 9 \quad (0.2)$$

$$\begin{pmatrix} -3 - a & -9 \end{pmatrix} \begin{pmatrix} -3 - a \\ -9 \end{pmatrix} = 9 \quad (0.3)$$

$$(a - 3)^2 = 0 \quad (0.4)$$

$\therefore a=3$

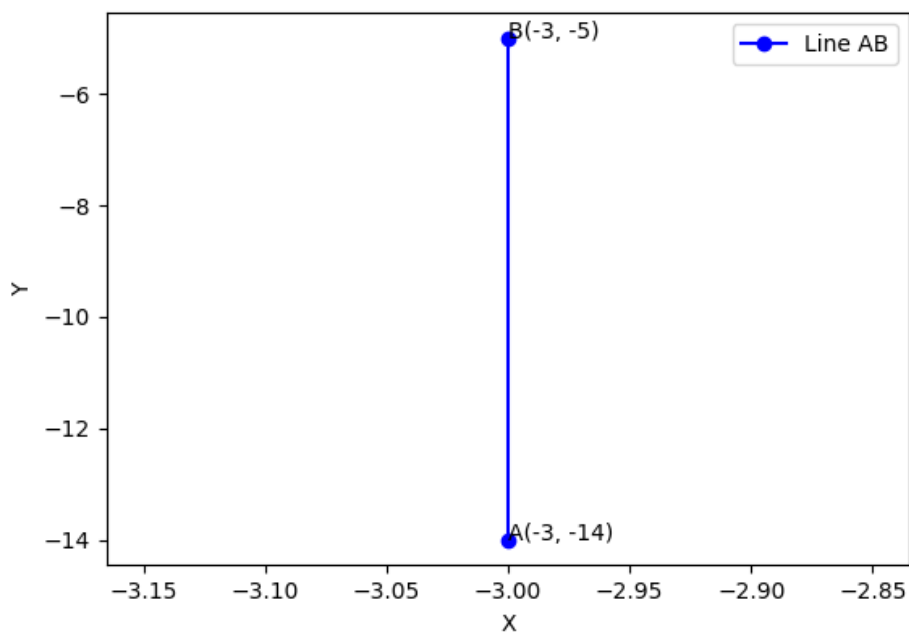


Fig. 0.1: Plot of A,B,C