7.2.17

EE24BTECH11012 - Bhavanisankar G S

QUESTION

Find the area of the circle centred at $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ and passing through $\begin{pmatrix} 4 \\ 6 \end{pmatrix}$ is

1) 5π
2) 10π
3) 25π
4) None of these

SOLUTION

POINTS	CO-ORDINATES
A	$\begin{pmatrix} 1 \\ 2 \end{pmatrix}$
B	$\begin{pmatrix} 4 \\ 6 \end{pmatrix}$
distanceAB	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

TABLE 4: Variables Used

$$\boxed{Eqn of circle : \|\mathbf{x}\|^2 + 2\mathbf{u}^T x + f = 0}$$

$$Radius = dist(A, B) \tag{4.1}$$

$$= \sqrt{(1 - 4)^2 + (2 - 6)^2} \tag{4.2}$$

$$= 5 \tag{4.3}$$

$$Area = \pi^* radius^2 \tag{4.4}$$

$$= 25\pi \tag{4.5}$$
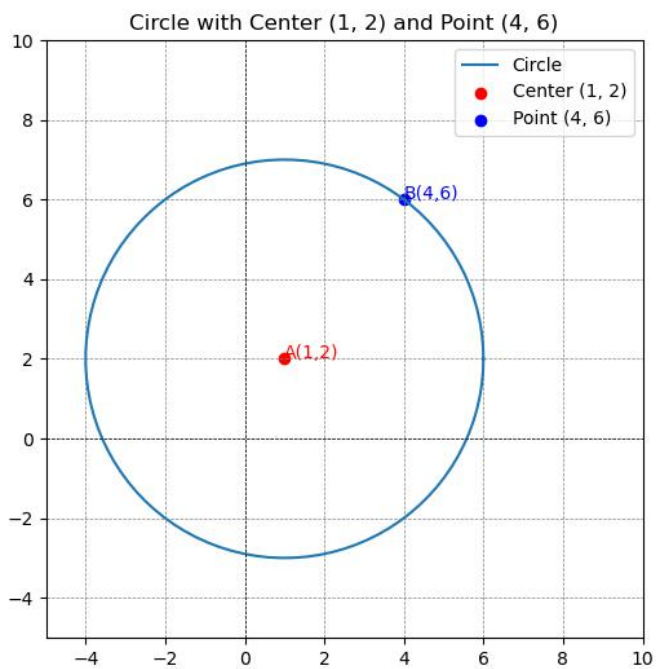
$$\tag{4.6}$$

Hence, the area of the given circle is 25π sq.units .

Fig. 4.1: A plot of the given question.