

Question-7-7.2-26

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

Question:

The centre of circle is $(2a, a - 7)$. Find the values of a if the circle passes through the point $A(11, -9)$ and has diameter $10\sqrt{2}$ units

Solution:

Point	Coordinates
A	$(2a, 4)$
B	$(-2, 3b)$
C	$(1, 2a + 1)$

TABLE 0: variables used

The radius of circle is $5\sqrt{2}$

Let the centre of the circle be **C**

$$\|A - C\| = 5\sqrt{2} \quad (0.1)$$

$$A - C = \begin{pmatrix} 11 - 2a \\ -2 - a \end{pmatrix} \quad (0.2)$$

$$(11 - 2a)^2 + (-2 - a)^2 = 50 \quad (0.3)$$

$$a^2 - 8a + 15 = 0 \quad (0.4)$$

$$(a - 3)(a - 5) = 0 \quad (0.5)$$

$$\text{Therefore, } a = 3 \text{ or } a = 5 \quad (0.6)$$

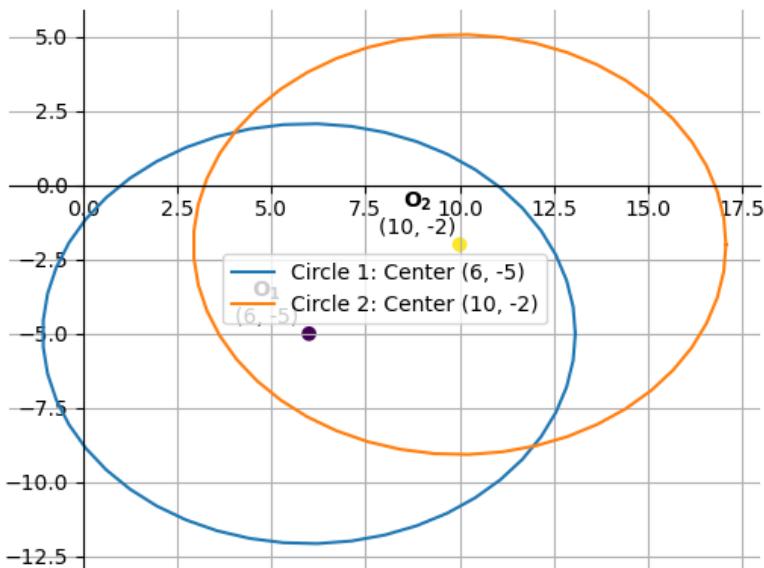


Fig. 0.1