

# Question-7-7.2-26

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## 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
<b>A</b>	$(2a, 4)$
<b>B</b>	$(-2, 3b)$
<b>C</b>	$(1, 2a + 1)$

TABLE 0: variables used

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

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

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

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

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

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

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

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

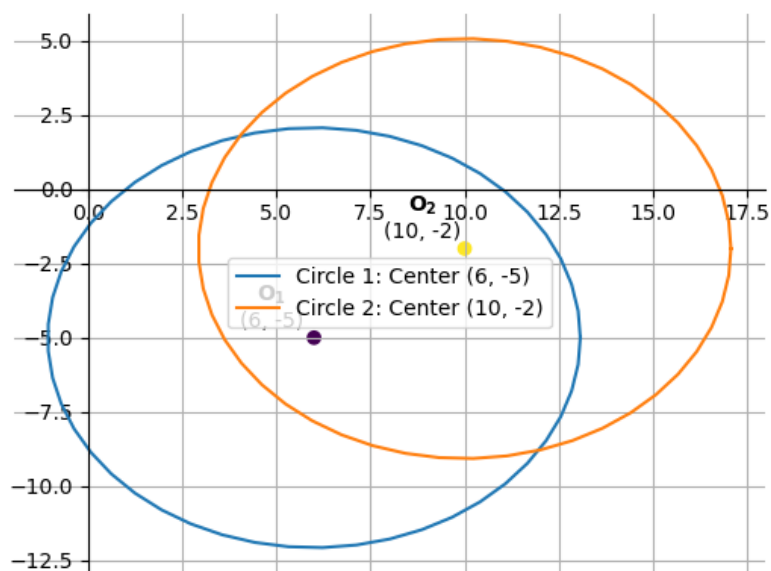


Fig. 0.1