1.5.1

EE25BTECH11013 - Bhargav

Question:
The center of a circle whose endpoints of a diameter of the circle A, B are $(-6, 3)$ and $(6, 4)$ is
Solution:
Let the endpoints of the diameter of the circle be **A** and **B**:

$$\mathbf{A} = \begin{pmatrix} -6 \\ 3 \end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix} 6 \\ 4 \end{pmatrix} \tag{0.1}$$

We can use the midpoint formula to find the center of the circle.
The center **C** is the midpoint of **A** and **B**:

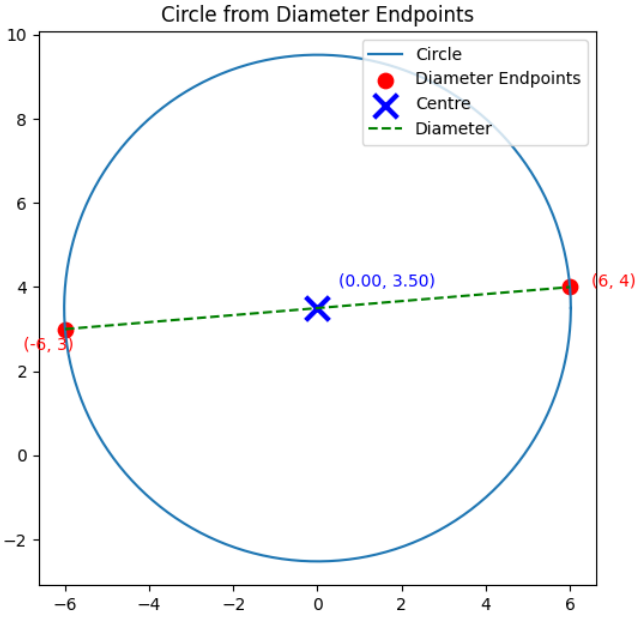
$$\mathbf{C} = \frac{\mathbf{A} + \mathbf{B}}{2} \tag{0.2}$$

$$\mathbf{C} = \frac{1}{2}\begin{pmatrix} -6 + 6 \\ 3 + 4 \end{pmatrix} \tag{0.3}$$

$$\mathbf{C} = \frac{1}{2}\begin{pmatrix} 0 \\ 7 \end{pmatrix} \tag{0.4}$$

$$\mathbf{C} = \begin{pmatrix} 0 \\ \frac{7}{2} \end{pmatrix}. \tag{0.5}$$

From the figure, it is clearly verified that the theoretical solution matches with the computational solution.


Circle from Diameter Endpoints
Circle
Diameter Endpoints
Centre
Diameter
(0.00, 3.50)
(6, 4)
(-6, 3)
10
8
6
4
2
0
−2
−6
−4
−2
0
2
4
6