

## Circles - Class XI

### Related Questions with Solutions

#### Questions

##### Question: 01

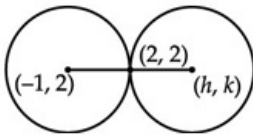
If a circle  $C$ , whose radius is 3, touches externally the circle,  $x^2 + y^2 + 2x - 4y - 4 = 0$  at the point  $(2, 2)$ , then the length of the intercept cut by this circle  $C$ , on the  $x$ -axis is equal to :

- A.  $2\sqrt{3}$
- B.  $3\sqrt{2}$
- C.  $\sqrt{5}$
- D.  $2\sqrt{5}$

#### Solutions

##### Solution: 01

Centre of circle  $x^2 + y^2 + 2x - 4y - 4 = 0$  is  $(-1, 2)$  and radius  $= \sqrt{1 + 4 + 4} = 3$   
Let  $[h, k]$  be the centre of another circle.



$$\text{Now, } \frac{h - 1}{2} = 2 \text{ and } \frac{k + 2}{2} = 2$$

$$\Rightarrow h = 4 + 1 = 5 \text{ and } k = 4 - 2 = 2$$

So, centre of required circle is  $[5, 2]$  and radius  $= 3$ .

$$\therefore \text{Equation of circle becomes } (x - 5)^2 + (y - 2)^2 = (3)^2$$

$$\Rightarrow x^2 + y^2 - 10x - 4y + 20 = 0 \quad \dots\dots\dots [i]$$

Length of intercept made by [i] on  $x$ -axis

$$= 2\sqrt{g^2 - c} = 2\sqrt{25 - 20}$$

$$(\because g = -5, c = 20)$$

$$= 2\sqrt{5}$$

#### Correct Options

Answer:01

Correct Options: D