

## Circles - Class XI

### Past Year JEE Questions

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#### Questions

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##### Question: 01

The locus of a point, which moves such that the sum of squares of its distances from the points  $(0, 0)$ ,  $(1, 0)$ ,  $(0, 1)$ ,  $(1, 1)$  is 18 units, is a circle of diameter  $d$ . Then  $d^2$  is equal to \_\_\_\_\_.

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#### Solutions

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##### Solution: 01

##### Answer

Correct Answer is **16**

##### Explanation

Let point  $P(x, y)$

$A(0, 0)$ ,  $B(1, 0)$ ,  $C(0, 1)$ ,  $D(1, 1)$

$$(PA)^2 + (PB)^2 + (PC)^2 + (PD)^2 = 18$$

$$x^2 + y^2 + x^2 + (y - 1)^2 + (x - 1)^2 + y^2 + (x - 1)^2 + (y - 1)^2 = 18$$

$$\Rightarrow 4(x^2 + y^2) - 4y - 4x = 14$$

$$\Rightarrow x^2 + y^2 - x - y - \frac{7}{2} = 0$$

$$d = 2\sqrt{\frac{1}{4} + \frac{1}{4} + \frac{7}{2}}$$

$$\Rightarrow d^2 = 16$$