JEE Main 2025
Mathematics
Live Quiz
Practice Test - 15

1. The point diametrically opposite to the point $P(1, 0)$ on the circle $x^2 + y^2 + 2x + 4y - 3 = 0$ is:

   (A) $(-3, 4)$ (B) $(-3, -4)$ (C) $(3, 4)$ (D) $(3, -4)$

2. If the lines $3x - 4y - 7 = 0$ and $2x - 3y - 5 = 0$ are two diameters of a circle of area 49π square units, the equation of the circle is :

   (A) $x^2 + y^2 + 2x - 2y - 62 = 0$ (B) $x^2 + y^2 - 2x + 2y - 62 = 0$

   (C) $x^2 + y^2 - 2x + 2y - 47 = 0$ (D) $x^2 + y^2 + 2x - 2y - 47 = 0$

3. Centres of the three circles
   $$x^2 + y^2 - 4x - 6y - 14 = 0$$
   $$x^2 + y^2 + 2x + 4y - 5 = 0$$
   and $x^2 + y^2 - 10x - 16y + 7 = 0$
   (A) are the vertices of a right triangle
   (B) the vertices of an isosceles triangle which is not regular
   (C) vertices of a regular triangle
   (D) are collinear

4. The area of an equilateral triangle inscribed in the circle $x^2 + y^2 - 2x = 0$ is :

   (A) $\dfrac{3\sqrt{3}}{4}$ (B) $\dfrac{3\sqrt{3}}{2}$ (C) $\dfrac{3\sqrt{3}}{8}$ (D) None of these

5. A circle of radius 5 has its centre on the negative x-axis and passes through the point (2, 3).The intercept made by the circle on the y-axis is

   (A) 10   (B) $2\sqrt{21}$ (C) $2\sqrt{11}$ (D) imaginary y-intercept

6. The equation of the image of the circle $x^2 + y^2 + 16x - 24y + 183 = 0$ by the line mirror $4x + 7y + 13 = 0$ is :

   (A) $x^2 + y^2 + 32x - 4y + 235 = 0$ (B) $x^2 + y^2 + 32x + 4y - 235 = 0$

   (C) $x^2 + y^2 + 32x - 4y - 235 = 0$ (D) $x^2 + y^2 + 32x + 4y + 235 = 0$

7. The points $(x_1, y_1), (x_2, y_2), (x_1, y_2)$ and (x_2, y_1) are always :

   (A) collinear   (B) concyclic
   (C) vertices of a square   (D) vertices of a rhombus

8. The circle $x^2 + y^2 = 4x + 8y + 5$ intersects the line $3x - 4y = m$ at two distinct points, if :

   (A) $-85 < m < -35$ (B) $-35 < m < 15$ (C) $15 < m < 65$ (D) $35 < m < 85$

9. The circle passing through $(1, -2)$ and touching the axis of x at $(3, 0)$ also passes through the point

(A) $(2, -5)$ (B) $(5, -2)$ (C) $(-2, 5)$ (D) $(-5, 2)$

10. Let C be the circle with centre at $(1, 1)$ and radius $= 1$. If T is the circle centred at $(0, y)$ passing through origin and touching the circle C externally, then the radius of T is equal to :

(A) $\dfrac{1}{4}$ (B) $\dfrac{\sqrt{3}}{\sqrt{2}}$ (C) $\dfrac{\sqrt{3}}{2}$ (D) $\dfrac{1}{4}$

11. The normal at the point $(3, 4)$ on a circle cuts the circle at the point $(-1, -2)$. Then the equation of the circle is :

(A) $x^2 + y^2 + 2x - 2y - 13 = 0$ (B) $x^2 + y^2 - 2x - 2y - 11 = 0$

(C) $x^2 + y^2 - 2x + 2y + 12 = 0$ (D) $x^2 + y^2 - 2x - 2y + 14 = 0$

12. The angle between the two tangents from the origin to the circle $(x - 7)^2 + (y + 1)^2 = 25$ equals :

(A) $\dfrac{\pi}{6}$ (B) $\dfrac{\pi}{3}$ (C) $\dfrac{\pi}{2}$ (D) $\dfrac{\pi}{4}$

13. The number of common tangent(s) to the circles $x^2 + y^2 + 2x + 8y - 23 = 0$ and $x^2 + y^2 - 4x - 10y + 19 = 0$ is :

(A)   1   (B)   2   (C)   3   (D)   4

14. If L_1 and L_2 are the length of the tangent from $(0, 5)$ to the circles $x^2 + y^2 + 2x - 4 = 0$ and $x^2 + y^2 - y + 1 = 0$ then :

(A) $L_1 = 2L_2$ (B) $L_2 = 2L_1$ (C) $L_1 = L_2$ (D) $L_1^2 = L_2$

15. A straight line with slope 2 and y-intercept 5 touches the circle, $x^2 + y^2 + 16x + 12y + c = 0$ at a point Q. Then the coordinates of Q are :

(A) $(-6, 11)$ (B) $(-9, -13)$ (C) $(-10, -15)$ (D) $(-6, -7)$

Answer Keys

1.	(B)	2.	(C)	3.	(D)	4.	(A)	5.	(B)
6.	(B)	7.	(B)	8.	(B)	9.	(B)	10.	(A)
11.	(B)	12.	(C)	13.	(C)	14.	(C)	15.	(D)