



A Level Maths

Topic: Circle Equation and Tangents

Instructions

Answer all questions. Show complete working. Use the equation of the circle and properties of tangents wherever applicable.

Practice Questions

- Find the equation of a circle with:
 - Center $(2, -3)$ and radius 5.
 - Center $(0, 0)$ and radius 7.
 - Center $(-4, 2)$ and radius 6.
- Find the equation of the circle that passes through the points $(1, 2)$, $(4, 5)$, and $(-2, 3)$.
- Find the center and radius of the circle whose equation is:

$$x^2 + y^2 - 4x + 6y - 12 = 0$$

- Find the equation of the tangent to the circle $x^2 + y^2 = 25$ at the point $(3, 4)$.
- A circle has the equation $(x - 2)^2 + (y + 3)^2 = 16$. Find the coordinates of the center and the radius of the circle.
- Find the equation of the tangent to the circle $x^2 + y^2 = 9$ at the point $(3, 0)$.
- Find the equation of the circle that passes through the point $(1, 1)$ and has its center at $(0, 0)$.
- Determine the equation of the circle with center $(-2, 5)$ and passing through the point $(3, 1)$.

9. Find the equation of the circle with center $(4, -1)$ and passing through the point $(6, 2)$.
10. Find the equation of the tangent to the circle $x^2 + y^2 = 16$ at the point $(-4, 0)$.

Multiple-Choice Questions

1. The equation of a circle with center $(2, 3)$ and radius 4 is:
 - A. $(x - 2)^2 + (y - 3)^2 = 16$
 - B. $(x + 2)^2 + (y + 3)^2 = 4$
 - C. $(x - 2)^2 + (y + 3)^2 = 4$
 - D. $(x + 2)^2 + (y - 3)^2 = 16$
2. What is the center and radius of the circle $x^2 + y^2 - 6x + 8y - 3 = 0$?
 - A. Center: $(3, -4)$, Radius: 5
 - B. Center: $(3, -4)$, Radius: 4
 - C. Center: $(-3, 4)$, Radius: 5
 - D. Center: $(-3, 4)$, Radius: 4
3. The equation of the tangent to the circle $x^2 + y^2 = 25$ at the point $(3, 4)$ is:
 - A. $3x + 4y = 25$
 - B. $3x - 4y = 25$
 - C. $4x + 3y = 25$
 - D. $4x - 3y = 25$
4. The equation of the tangent to the circle $x^2 + y^2 = 9$ at the point $(3, 0)$ is:
 - A. $x = 3$
 - B. $y = 0$
 - C. $x + 3y = 9$
 - D. $3x + y = 9$
5. The center of the circle given by the equation $x^2 + y^2 - 6x + 4y = 12$ is:
 - A. $(3, -2)$
 - B. $(-3, 2)$
 - C. $(3, 2)$
 - D. $(-3, -2)$