



CIRCLE

Problem 1

A circle touching the x -axis at $(3, 0)$ and making an intercept of length 8 on the y -axis passes through the point

[JEE (Main) 2019]

- (a) $(2, 3)$ (b) $(3, 10)$
(c) $(1, 5)$ (d) $(3, 5)$

Problem 2

The number of common tangents to the circles $x^2 + y^2 = 4$ and $x^2 + y^2 - 6x - 8y + 24 = 0$ is

[EAMCET 1990;

IIT 1998; Odisha JEE 2005; KCET 2007, 11]

- (a) 3 (b) 4
(c) 2 (d) 1

Problem 3

The point of contact of the tangent to the circle $x^2 + y^2 = 5$ at the point $(1, -2)$ which touches the circle $x^2 + y^2 - 8x + 6y + 20 = 0$, is

[Roorkee 1989]

- (a) $(2, -1)$ (b) $(3, -1)$
(c) $(4, -1)$ (d) $(5, -1)$

Problem 4

If $2x - 4y = 9$ and $6x - 12y + 7 = 0$ are the tangents of same circle, then its radius will be

[Roorkee 1995; EAMCET 2003]

- (a) $\frac{\sqrt{3}}{5}$ (b) $\frac{17}{6\sqrt{5}}$
(c) $\frac{2\sqrt{5}}{3}$ (d) $\frac{17}{3\sqrt{5}}$

Problem 5

If two circles $(x - 1)^2 + (y - 3)^2 = r^2$ and $x^2 + y^2 - 8x + 2y + 8 = 0$ intersect in two distinct points, then

[IIT 1989; IIT Screening 1994; DCE 2000, 01;

KCET 2002; AIEEE 2003; MP PET 2004, 06;

UPSEAT 2004; WB JEE 2009]

- (a) $2 < r < 8$ (b) $r = 2$
(c) $r < 2$ (d) $r > 2$

Problem 6

For the two circles $x^2 + y^2 = 16$ and $x^2 + y^2 - 2y = 0$ there is/are

[JEE (Main) 2014]

- (a) One pair of common tangents
(b) Two pairs of common tangents
(c) Three common tangents
(d) No common tangent

Problem 7

Two tangents PQ and PR drawn to the circle $x^2 + y^2 - 2x - 4y - 20 = 0$ from point $P(16, 7)$. If the centre of the circle is C , then the area of quadrilateral $PQCR$ will be

[IIT 1981; MP PET 1994]

- (a) 75 sq. units (b) 150 sq. units
(c) 15 sq. units (d) None of these

Problem 8

Tangents drawn from the point $P(1, 8)$ to the circle $x^2 + y^2 - 6x - 4y - 11 = 0$ touch the circle at the points A and B . The equation of the circumcircle of the triangle PAB is

[IIT JEE 2009]

- (a) $x^2 + y^2 + 4x - 6y + 19 = 0$
(b) $x^2 + y^2 - 4x - 10y + 19 = 0$
(c) $x^2 + y^2 - 2x + 6y - 29 = 0$
(d) $x^2 + y^2 - 6x - 4y + 19 = 0$

Problem 9

A tangent to the circle $x^2 + y^2 = 5$ at the point $(1, -2)$ the circle $x^2 + y^2 - 8x + 6y + 20 = 0$

[IIT 1975]

- (a) Touches (b) Cuts at real points
(c) Cuts at imaginary points (d) None of these

Problem 10

Equation of the tangent to the circle, at the point $(1, -1)$, where centre is the point of intersection of the straight lines $x - y = 1$ and $2x + y = 3$ is

[JEE (Main) 2016]

- (a) $x + 4y + 3 = 0$ (b) $3x - y - 4 = 0$
(c) $x - 3y - 4 = 0$ (d) $4x + y - 3 = 0$

Problem 11

If $a > 2b > 0$ then the positive value of m for which $y = mx - b\sqrt{1+m^2}$ is a common tangent to $x^2 + y^2 = b^2$ and $(x-a)^2 + y^2 = b^2$, is [IIT Screening 2002]

- (a) $\frac{2b}{\sqrt{a^2 - 4b^2}}$ (b) $\frac{\sqrt{a^2 - 4b^2}}{2b}$
(c) $\frac{2b}{a - 2b}$ (d) $\frac{b}{a - 2b}$

Problem 12

A circle touches the x -axis and also touches the circle with centre at $(0, 3)$ and radius 2. The locus of the centre of the circle is [AIEEE 2005]

- (a) A hyperbola (b) A parabola
(c) An ellipse (d) A circle

Problem 13

The length of the diameter of the circle which touches the x -axis at the point $(1, 0)$ and passes through the point $(2, 3)$ is [AIEEE 2002]

- (a) $\frac{10}{3}$ (b) $\frac{3}{5}$
(c) $\frac{6}{5}$ (d) $\frac{5}{3}$

Problem 14

IIT 85

The tangents are drawn from the point $(4, 5)$ to the circle $x^2 + y^2 - 4x - 2y - 11 = 0$. The area of quadrilateral formed by these tangents and radii, is [IIT 1985]

- (a) 15 sq. units (b) 75 sq. units
(c) 8 sq. units (d) 4 sq. units

Problem 15

Let PQ and RS be tangents at the extremities of the diameter PR of a circle of radius r . If PS and RQ intersect at a point X on the circumference of the circle, then $2r$ equals [IIT Screening 2001]

- (a) $\sqrt{PQ \cdot RS}$ (b) $\frac{PQ + RS}{2}$
(c) $\frac{2PQ \cdot RS}{PQ + RS}$ (d) $\sqrt{\frac{PQ^2 + RS^2}{2}}$

Problem 16

The number of common tangents to the circles $x^2 + y^2 - 4x - 6y - 12 = 0$ and $x^2 + y^2 + 6x + 18y + 26 = 0$, is [JEE (Main) 2015]

- (a) 1 (b) 2
(c) 3 (d) 4

Problem 17

If the tangent at the point P on the circle $x^2 + y^2 + 6x + 6y = 2$ meets the straight line $5x - 2y + 6 = 0$ at a point Q on the y -axis, then the length of PQ is [IIT Screening 2002]

- (a) 4 (b) $2\sqrt{5}$
(c) 5 (d) $3\sqrt{5}$

Problem 18

If a tangent to the circle $x^2 + y^2 = 1$ intersects the coordinate axes at distinct points P and Q , then the locus of the mid-point of PQ is [JEE (Main) 2019]

- (a) $x^2 + y^2 - 4x^2y^2 = 0$ (b) $x^2 + y^2 - 16x^2y^2 = 0$
(c) $x^2 + y^2 - 2x^2y^2 = 0$ (d) $x^2 + y^2 - 2xy = 0$



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