



## MATHS

### BOOKS - DEEPTI MATHS (TELUGU ENGLISH)

## CIRCLE

#### Solved Example

1. Origin is the centre of a circle passing through the vertices of an equilateral triangle whose median is of length  $3a$  then the equation of the circle is

A.  $x^2 + y^2 = 36$

B.  $x^2 + y^2 = 64$

C.  $x^2 + y^2 = 16$

D.  $x^2 + y^2 = 4$

**Answer: D**



**Watch Video Solution**

2. The lines  $2x-3y=11$  and  $3x-4y=18$  are two diameters of a circle of area 154 sq unit. Then the equation of this circle is

A.  $x^2 + y^2 - 2x - 2y - 62 = 0$

B.  $x^2 + y^2 - 4x + 6y - 36 = 0$

C.  $x^2 + y^2 - 12x - 12y - 47 = 0$

D.  $x^2 + y^2 - 2x + 2y - 62 = 0$

**Answer: B**



**Watch Video Solution**

3. A square is inscribed in the circle  $x^2 + y^2 - 2x + 4y - 3 = 0$  with its sides parallel to the coordinate axes. One vertex of the square is

A. (3,4)

B. (3,-4)

C. (8,-5)

D. (-8,5)

**Answer: B**



**Watch Video Solution**

4. The lines  $3x-4y+4=0$  and  $6x-8y-7=0$  are tangents to the same circle. The radius of the circle is

A.  $3/2$

B.  $3/4$

C.  $3/8$

D. none

**Answer: B**

 [Watch Video Solution](#)

5. If the lengths of the tangents from two points A, B to a circle are 4, 3 respectively. If A,B are conjugate points then AB=

A. 5

B.  $\sqrt{85}$

C.  $\sqrt{85}/2$

D. none

**Answer: A**

 [Watch Video Solution](#)

6. If the lines  $2x - 3y + 7 = 0$ ,  $3x + ky + 5 = 0$  cut the coordinate axes in concyclic points then k=

A. 2

B. 3

C. -2

D. -3

**Answer: C**



[Watch Video Solution](#)

7. If  $(3,-2)$  is the midpoint of the chord AB of the circle  $x^2 + y^2 - 4x + 6y - 5 = 0$  then  $AB=$

A. 4

B. 8

C. 12

D. 16

**Answer: B**



[Watch Video Solution](#)

8. If the four points of intersection of the lines  $2x + y - 1 = 0$ ,  $x + 2y + 2 = 0$  with the coordinate axes lie on a circle then its centre is

A. (0,0)

B. (3/4,0)

C. (0,3/4)

D. (-3/4,0)

**Answer: D**



[Watch Video Solution](#)

9. If the circles  $x^2 + y^2 + 4x - 2y - 220 = 0$ ,  $x^2 + y^2 - 4x + 4y - 92 = 0$  touch each other then the points of contact is

A. (-2,1)

B. (2,-2)

C. (10,-8)

D. (0,-1)

**Answer: C**

 [Watch Video Solution](#)

10. The angle between the circles  $x^2 + y^2 - 4x - 6y - 3 = 0$ ,  
 $x^2 + y^2 + 8x - 4y + 11 = 0$  is

A.  $\pi/3$

B.  $\pi/2$

C.  $\pi/5$

D.  $\pi/4$

**Answer: A**

 [Watch Video Solution](#)

11. The number of common tangents that can be drawn to the circles

$$x^2 + y^2 - 4x + 6y + 8 = 0, x^2 + y^2 - 10x - 6y + 14 = 0$$

A. 1

B. 2

C. 3

D. 4

**Answer: C**

 [Watch Video Solution](#)

12. If the coordinates of the centre of the circle are roots of the equations

$6x^2 - 5x + 1 = 0$  and radius is  $5/6$  then its equation is

A.  $x^2 + y^2 - 3x - 2y - 1 = 0$



B.  $3(x^2 + y^2) - 3x - 2y - 1 = 0$

C.  $3(x^2 + y^2) + 3x + 2y + 1 = 0$

D.  $x^2 + y^2 + 3x + 2y + 1 = 0$

**Answer: B**



**Watch Video Solution**

**13.** The value of the parameter of two points A and B lying on the circle,  $x^2 + y^2 - 6x + 4y - 12 = 0$  are  $30^\circ, 90^\circ$  respectively. The equation of the chord joining A and B is

A.  $x + \sqrt{3}y = 0$

B.  $x - \sqrt{3}y = 0$

C.  $x + \sqrt{3}y - 3(1 + \sqrt{3}) = 0$

D.  $\sqrt{3}x + \sqrt{3}y + 61 = 0$

**Answer: C**

[Watch Video Solution](#)

14. If  $\alpha, \beta$  are roots of  $3x^2 - 6x + 2 = 0$  then the equation of circle with centre  $(\alpha + \beta, \alpha\beta)$  and radius  $(\alpha^2 + \beta^2)$  is

A.  $x^2 + y^2 - 36x - 12y + 24 = 0$

B.  $x^2 + y^2 - 36x - 12y - 24 = 0$

C.  $9(x^2 + y^2) - 36x - 12y - 24 = 0$

D.  $9(x^2 + y^2) + 36x + 12y - 24 = 0$

**Answer: C**

[Watch Video Solution](#)

15. If  $x^2 + y^2 + 2gx + 6y + 5g + 3 = 0$  represents a circle then  $g \in$

A.  $\mathbb{R} - (2,3)$

B.  $\mathbb{R}$

C. (2,3)

D.  $(-\infty, 0)$

**Answer: A**



[Watch Video Solution](#)

### Exercise 1A(Circle)

1. The equation of the circle with centre (3, -2) and radius 3 is

A.  $x^2 + y^2 - 6x + 4y + 4 = 0$

B.  $x^2 + y^2 - 4x + 6y + 9 = 0$

C.  $x^2 + y^2 + 14x + 6y - 42 = 0$

D.  $x^2 + y^2 + 2x + 16y + 40 = 0$

**Answer: A**



[Watch Video Solution](#)

2. The equation of the circle with centre origin and radius 2 is

A.  $x^2 + y^2 - 6x + 4y + 4 = 0$

B.  $x^2 + y^2 = 4$

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

D.  $x^2 + y^2 + 2x + 16y + 40 = 0$

**Answer: B**



[Watch Video Solution](#)

3. The centre of the circle  $x^2 + y^2 - 4x - 2y - 4 = 0$  is

A. (2, 1)

B. (0, 0)

C. (-2, -1)

D. (1, -1)

**Answer: A**



**Watch Video Solution**

4. The centre of the circle  $(1 + m^2)(x^2 + y^2) - 2cx - 2cm y = 0$  is

A.  $\left( \frac{c}{1 + m^2}, \frac{cm}{1 + m^2} \right)$

B.  $\left( -\frac{c}{1 + m^2}, \frac{cm}{1 + m^2} \right)$

C.  $\left( \frac{c}{1 + m^2}, -\frac{cm}{1 + m^2} \right)$

D.  $\left( -\frac{c}{1 + m^2}, -\frac{cm}{1 + m^2} \right)$

**Answer: A**



**Watch Video Solution**

5. The radius of the circle  $x^2 + y^2 + 6x + 8y - 96 = 0$  is

A. 11

B.  $\frac{\sqrt{19}}{2}$

C.  $\frac{4}{\sqrt{3}}$

D. 20

**Answer: A**



**Watch Video Solution**

6. The radius of the circle  $(1 + m^2)(x^2 + y^2) - 2cx - 2cm y = 0$  is

A. 11

B.  $\frac{\sqrt{19}}{2}$

C.  $\frac{4}{\sqrt{3}}$

D.  $\frac{c}{\sqrt{1 + m^2}}$

**Answer: D**



**Watch Video Solution**

7. The length of the diameter of the circle  $x^2 + y^2 - 6x - 8y = 0$  is

A. 5

B. 10

C. 15

D. 20

**Answer: B**



[Watch Video Solution](#)

8. The equation of the circle passing through  $(-7, 1)$  and having centre at

$(-4, -3)$  is

A.  $x^2 + y^2 + 8x + 6y = 0$

B.  $x^2 + y^2 + 4x - 16y - 101 = 0$

C.  $x^2 + y^2 - 4x - 6y = 0$

D.  $x^2 + y^2 = 5$

**Answer: A**



**Watch Video Solution**

9. The diameters of a circle are along  $2x+y-7=0$  and  $x+3y-11=0$ . Then, the equation of this circle, which also passes through  $(5,7)$  is:

A.  $x^2 + 4y^2 - 4x - 6y - 16 = 0$

B.  $x^2 + y^2 - 4x - 6y - 20 = 0$

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

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

**Answer: C**



**Watch Video Solution**

10. If the lines  $2x-3y=5$  and  $3x-4y=7$  are two diameters of a circle of radius 7, then the equation of the circle is



A.  $x^2 + y^2 + 2x - 4y - 47 = 0$

B.  $x^2 + y^2 = 49$

C.  $x^2 + y^2 - 2x + 2y - 47 = 0$

D.  $x^2 + y^2 = 17$

**Answer: C**



**Watch Video Solution**

**11.** 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

A.  $6/5$

B.  $5/3$

C.  $10/3$

D.  $3/5$

**Answer: C**

 [Watch Video Solution](#)

12. If  $2x^2 + by^2 + 4x - 6y - 1 = 0$  represents a circle, then  $b =$

A. 2

B. 3

C. 1

D. 0

**Answer: A**

 [Watch Video Solution](#)

13. If  $x^2 + y^2 - 4x + 6y + c = 0$  represents a circle of radius 5 then  $c =$

A.  $-2$

B.  $-12$

C.  $-3$

D. 1

**Answer: B**



[Watch Video Solution](#)

14. If  $x^2 + y^2 + 2gx + 2fy + 9 = 0$  represents a circle with centre  $(1, -3)$  then radius =

A. 1

B. 2

C. 3

D.  $-1$

**Answer: A**



[Watch Video Solution](#)

15. The point  $(-1,0)$  lies on the circle  $x^2 + y^2 - 4x + 8y + k = 0$ . The radius of the circle is

A. 4

B. 5

C. 3

D. none

**Answer: B**



[Watch Video Solution](#)

16. The centroid of an equilateral triangle is  $(0, 0)$  and the length of the altitude is 6. The equation of the circumcircle of the triangle is

A.  $x^2 + y^2 = 6$

B.  $x^2 + y^2 = 16$

C.  $x^2 + y^2 = 9$

D.  $x^2 + y^2 = 36$

**Answer: B**



**Watch Video Solution**

17. Origin is the centre of a circle passing through the vertices of an equilateral triangle whose median is of length  $3a$  then the equation of the circle is

A.  $x^2 + y^2 = 9a^2$

B.  $x^2 + y^2 = 16a^2$

C.  $x^2 + y^2 = 4a^2$

D.  $x^2 + y^2 = a^2$

**Answer: C**



**Watch Video Solution**

18. The circumcircle of a triangle is given by  $x^2 + y^2 - 4x + 6y - 3 = 0$ .

The radius of the nine point circle of the triangle is

A. 2

B. 3

C. 4

D. 1

**Answer: A**



[Watch Video Solution](#)

19. The centres of the three circles

$$x^2 + y^2 - 10x + 9 = 0, x^2 + y^2 - 6x + 2y + 1 = 0, x^2 + y^2 - 9x - 4y +$$

lie on the line

A.  $x - 2y = 5$

B.  $y - 2x = 5$

C.  $2y-x=5$

D. none

**Answer: D**



[Watch Video Solution](#)

20. For the circle  $x^2 + y^2 - 4x - 2y - 36 = 0$ , the point  $(3, 5)$

A. lies inside the circle

B. lies outside the circle

C. lies on the circle

D. is the centre of the circle

**Answer: A**



[Watch Video Solution](#)

21. For the circle  $2x^2 + 2y^2 - 5x - 4y - 3 = 0$  the point (3, 5)

- A. lies inside the circle
- B. lies outside the circle
- C. lies on the circle
- D. is the centre of the circle

**Answer: B**



[Watch Video Solution](#)

22. The power of the point (1, 2) w.r.t the circle  $x^2 + y^2 - 4x - 6y - 12 = 0$  is

- A. - 23
- B. 0
- C. 69
- D. 17



**Answer: A::D**



**Watch Video Solution**

**23.** The value of  $a$ , such that the power of the point  $(1, 6)$  with respect to the circle  $x^2 + y^2 + 4x - 6y - a = 0$  is  $-16$  is

A. 7

B. 11

C. 13

D. 21

**Answer: D**



**Watch Video Solution**

**24.** The equation  $(x^2 - a^2)^2 + (y^2 - b^2)^2 =$  represent points which are

- A. collinear
- B. on a circle with centre (a,b)
- C. on a circle with centre (0,0)
- D. coincident

**Answer: D**

 [Watch Video Solution](#)

25. The equation  $x^2 + y^2 + 4x + 6y + 13 = 0$  represents

- A. a circle
- B. a pair of two straight lines
- C. a pair of coincident straight lines
- D. a point

**Answer: D**

 [Watch Video Solution](#)

26. The locus of a point which divides the join of A(-1, 1) and a variable point P on the circle  $x^2 + y^2 = 4$  in the ratio 3:2 is

A.  $25(x^2 + y^2) + 20(x + y) + 28 = 0$

B.  $25(x^2 + y^2) - 20(x + y) + 28 = 0$

C.  $25(x^2 + y^2) + 20(x - y) + 28 = 0$

D.  $25(x^2 + y^2) + 20(x - y) - 28 = 0$

**Answer: D**



[Watch Video Solution](#)

27. If the two circles  $x^2 + y^2 + 2gx + c = 0$  and  $x^2 + y^2 - 2fy - c = 0$  have equal radius then locus of (g,f) is

A.  $x^2 + y^2 = c^2$

B.  $x^2 - y^2 = 2c$

C.  $x - y^2 = c^2$

D. none

**Answer: B**



[Watch Video Solution](#)

**28.** The locus of the point which moves such that the sum of the squares of its distances from  $(0, a)$  and  $(0, -a)$  is  $2r^2$  is

A.  $x^2 + y^2 = a^2$

B.  $x^2 + y^2 = r^2$

C.  $x^2 + y^2 = r^2 + a^2$

D.  $x^2 + y^2 = r^2 - a^2$

**Answer: D**



[Watch Video Solution](#)

29. The radius of the circle passing through the point (6, 2) and two of whose diameters are  $x+y=6$  and  $x+2y=4$  is

A. 10

B.  $2\sqrt{5}$

C. 6

D. 4

**Answer: B**



[Watch Video Solution](#)

30. Equation of the circle with radius 10 and whose two diameters are  $x + y = 6$  and  $x + 2y = 4$  is

A.  $x^2 + y^2 + 16x - 4y - 32 = 0$

B.  $x^2 + y^2 - 16x + 4y - 32 = 0$

C.  $x^2 + y^2 - 16x + 4y + 32 = 0$

D. none

**Answer: B**



**Watch Video Solution**

**31.** If the line  $3x-2y + 6=0$  meets X-axis and Y-axis respectively at A and B, then the equation of the circle with radius AB and centre at A. is

A.  $x^2 + y^2 + 4x + 9 = 0$

B.  $x^2 + y^2 + 4x - 9 = 0$

C.  $x^2 + y^2 + 4x + 4 = 0$

D.  $x^2 + y^2 + 4x - 4 = 0$

**Answer: b**



**Watch Video Solution**

32. Consider the circle  $x^2 + y^2 - 4x - 2y + c = 0$  whose centre is A(2, 1)

If the point P (10, 7) is such that the line segment PA meets the circle in Q

With PQ=5, then c=

A. -15

B. 20

C. 30

D. -20

**Answer: D**



[Watch Video Solution](#)

33. If A=(1, 2), B=(4, 5) then the equation of the circle having  $\overline{AB}$  as diameter is

A.  $x^2 + y^2 - 5x - 7y + 14 = 0$

B.  $x^2 + y^2 - 8x - 2y - 51 = 0$

$$C. x^2 + y^2 - 8x - 12y + 27 = 0$$

$$D. x^2 + y^2 - 5x - 7y + 14 = 0$$

**Answer: A**



**Watch Video Solution**

**34.** The equation of the circle through (1, 0) and (0, 1) and having tallest possible radius

$$A. x^2 + y^2 - x - y = 0$$

$$B. 2x^2 + 2y^2 - x - y = 0$$

$$C. x^2 + y^2 + x + y = 0$$

D. none

**Answer: A**



**Watch Video Solution**



35. Equation  $x^2 + 2ax - b^2 = 0$  has real roots  $\alpha, \beta$  and equation  $x^2 + 2px - q^2 = 0$  has real roots  $\gamma, \delta$ . If circle C is drawn with the points  $(\alpha, \gamma), (\beta, \delta)$  as extremities of a diameter, then the equation of is

A.  $x^2 + y^2 + 2ax + 2py - b^2 - q^2 = 0$

B.  $x^2 + y^2 + 2ax + 2py + b^2 + q^2 = 0$

C.  $x^2 + y^2 - 2ax - 2py + b^2 + q^2 = 0$

D.  $x^2 + y^2 + 2ax - 2py + b^2 - q^2 = 0$

**Answer: A**



**Watch Video Solution**

36. If  $\alpha, \beta$  the roots of  $x^2 + ax + b = 0$  and  $\gamma, \delta$  the roots of  $y^2 + cy + d = 0$  then the equation of the circle having the equation of the circle having the line joining  $(\alpha, \gamma), (\beta, \delta)$  diameter is

A.  $x^2 + y^2 + ax + cy + (b + d) = 0$

B.  $x^2 + y^2 + ax + cy + cy - (a + c) = 0$

C.  $x^2 + axb - b = 0$

D.  $x^2 - ax - b = 0$

**Answer: A**



**Watch Video Solution**

37. The circle described on the line joining the points (0,1), (a,b) as diameter cuts the X-axis in points whose abscissae are roots of the equation

A.  $x^2 + ax + b = 0$

B.  $x^2 - ax + b = 0$

C.  $x^2 + axb - b = 0$

D.  $x^2 - ax - b = 0$

**Answer: B**



[Watch Video Solution](#)

38. If the circles described on the line joining the points  $(0,1)$  and  $(\alpha, \beta)$  as diameter cuts the axis of the points whose abscissae are the roots of the equation  $x^2 - 5x + 3 = 0$  then  $(\alpha, \beta) =$

A.  $(5,3)$

B.  $(3,5)$

C.  $(-5,3)$

D.  $(3,-5)$

**Answer: A**



[Watch Video Solution](#)

39. If one end of the diameter of the circle  $x^2 + y^2 - 6x + 4y - 12 = 0$  is  $(7, -5)$  then the other end of the diameter is

A. (-1,-3)

B. (-1,1)

C. (-4,3)

D. (-4,4)

**Answer: B**



**Watch Video Solution**

**40.** The point diametrically opposite to the point P (1,0) on the circle

$$x^2 + y^2 + 2x + 4y - 3 = 0 \text{ is}$$

A. (-3,4)

B. (-3,-4)

C. (3,4)

D. (3,-4)

**Answer: B**

 [Watch Video Solution](#)

41. The normal to the circle given by  $x^2 + y^2 - 6x + 8y - 144 = 0$  at (8, 8) meets the circle again at the point

A. (2,-16)

B. (2,16)

C. (-2,16)

D. (-2,-16)

**Answer: D**

 [Watch Video Solution](#)

42. The centre and radius of the circle with the segment of the line  $x+y=1$  cut off by the coordinate axes as diameter are

A. (1, 1),  $\sqrt{2}$

B.  $(1/2, 1/2), \sqrt{2}$

C.  $(1/2, 1/2), 1/\sqrt{2}$

D.  $(0,0),1$

**Answer: C**



**Watch Video Solution**

**43.** If  $(x, 3)$  and  $(3, 5)$  are the ends of the diameter of a circle with centre at  $(2, y)$ , then the values of  $x$  and  $y$  are

A.  $x=1, y=4$

B.  $x=4, y=1$

C.  $x=8, y=2$

D. none

**Answer: A**



**Watch Video Solution**

44. The lines  $2x-3y=5$  and  $3x-4y=7$  are two diameters of a circle of area 154 sq unit. Then the equation of this circle is

A.  $x^2 + y^2 + 2x - 2y - 62 = 0$

B.  $x^2 + y^2 - 2x + 2y - 47 = 0$

C.  $x^2 + y^2 - 12 - 2y - 47 = 0$

D.  $x^2 + y^2 - 2x + 2y - 62 = 0$

**Answer: B**



[Watch Video Solution](#)

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

A.  $x^2 + y^2 - 2x + 2y - 62 = 0$

B.  $x^2 + y^2 - 2x + 2y - 47 = 0$

$$C. x^2 + y^2 + 2x - 2y - 62 = 0$$

$$D. x^2 + y^2 - 12 - 2y - 47 = 0$$

**Answer: B**



**Watch Video Solution**

**46.** A variable circle passes through the fixed point  $A(p, q)$  and touches  $x$ -axis. The locus of the other end of the diameter through  $A$  is

$$A. (x - p)^2 = 4qy$$

$$B. (y - q)^2 = 4px$$

$$C. (y - p)^2 = 4qx$$

$$D. (x - q)^2 = 4py$$

**Answer: A**



**Watch Video Solution**



47. If the lines  $2x+3y+1=0$  and  $3x-y-4=0$  lie along diameters of a circle of circumference  $10\pi$ , then the equation of the circle is

A.  $x^2 + y^2 - 2x + 2y - 23 = 0$

B.  $x^2 + y^2 + 2x - 2y - 23 = 0$

C.  $x^2 + y^2 + 2x + 2y - 23 = 0$

D.  $x^2 + y^2 - 2x - 2y - 23 = 0$

**Answer: A**



[Watch Video Solution](#)

48. The area of the circle  $(x+1)(x+2)+(y-1)(y+3)=0$  is

A.  $17\pi / 4$

B.  $17\pi / 2$

C.  $2\pi / 17$

D. none

**Answer: A**



[Watch Video Solution](#)

**49.** The centre of the circle  $(x-2)(x-4)+(y-1)(y+3)=0$  is

A. (3,2)

B. (3,-1)

C. (3,1)

D. (1,3)

**Answer: B**



[Watch Video Solution](#)

**50.** The centre of the circle circumscribing the triangle formed by the line

$3x+4y=24$  with the axes is

A. (4,3)

B. (-4,3)

C. (3,4)

D. (3,-4)

**Answer: A**



**Watch Video Solution**

**51.** The centre of the incircle of the triangle formed by the line  $3x+4y=24$  with the axes

A. (3,3)

B. (2,2)

C. (-2,2)

D. (2,-2)

**Answer: B**

 [Watch Video Solution](#)

52. Equation of the circle passing through A(1,2), B(5, 2) so that the angle subtended by AB at points on the circle is  $\pi/4$  is

A.  $x^2 + y^2 - 6x - 8 = 0$

B.  $x^2 + y^2 - 6x - 8y + 17 = 0$

C.  $x^2 + y^2 - 6x + 8 = 0$

D.  $x^2 + y^2 - 6x - 8y - 25 = 0$

**Answer: B**

 [Watch Video Solution](#)

53. The equation of the diameter of the circle  $x^2 + y^2 + 2x - 4y - 4 = 0$  that is parallel to  $3x+5y-4=0$  is

A.  $3x+5y=7$

B.  $3x+5y=-7$

C.  $3x-5y=7$

D.  $3x-5y=-7$

**Answer: A**



[Watch Video Solution](#)

54. The straight lines joining the origin to the points of intersection of the line  $4x+3y=24$  with the curve  $(x - 3)^2 + (y - 4)^2 = 25$

A. are coincident

B. are perpendicular

C. made equal angles x-axis

D. none

**Answer: B**



[Watch Video Solution](#)

55. A straight line moves such that the algebraic sum of the perpendiculars drawn to it from two fixed points is equal to  $2k$ . Then the straight line always touches a fixed circle of radius

A.  $2k$

B.  $k/2$

C.  $k$

D. none

**Answer: C**



[Watch Video Solution](#)

56. If the base of a triangle and the ratio of the lengths of the other two unequal sides are given, then the vertex lies on

A. a straight line

B. a circle

C. an ellipse

D. a parabola

**Answer: B**



**Watch Video Solution**

57. The condition that the chord of a circle  $x^2 + y^2 = a^2$  subtend a right angle at the centre of the circle is

A.  $a^2 = 2p^2$

B.  $p^2 = 2a^2$

C.  $p=2a$

D.  $a^2 = 2p^3$

**Answer: A**

[Watch Video Solution](#)

58. An equilateral triangle is inscribed in the circle  $x^2 + y^2 = a^2$ . The length of the side of the triangle is

A.  $a\sqrt{2}$

B.  $a\sqrt{3}$

C.  $2a$

D. none

**Answer: B**

[Watch Video Solution](#)

59. If an equilateral triangle is inscribed in the circle  $x^2 + y^2 - 6x - 4y + 5 = 0$  then its side is

A.  $\sqrt{6}$



B. 2

C.  $2\sqrt{2}$

D.  $2\sqrt{6}$

**Answer: D**



**Watch Video Solution**

**60.** A circle of radius  $r$  passes through the origin and meets the axes at A and B. The locus of the centroid of  $\triangle OAB$  is

A.  $x^2 + y^2 = 4r^2$

B.  $x^2 + y^2 = 3r^2$

C.  $3(x^2 + y^2) = r^2$

D.  $9(x^2 + y^2) = 4r^2$

**Answer: D**



**Watch Video Solution**

61.  $A = (\cos \theta, \sin \theta)$  and  $B = (\sin \theta, -\cos \theta)$  are two points. The locus of the centroid of  $\triangle OAB$  where O is the origin is

A.  $x^2 + y^2 = 3$

B.  $9x^2 + 9y^2 = 2$

C.  $2x^2 + 2y^2 = 9$

D.  $3x^2 + 3y^2 = 2$

**Answer: B**



**Watch Video Solution**

62. The equation of the circle which passes through the origin and cuts off chords of length 2 from the lines  $x=y$  and  $x=-y$  is

A.  $x^2 + y^2 \pm 2\sqrt{2}x, x^2 + y^2 \pm 2\sqrt{2}y = 0$

B.  $x^2 + y^2 \pm 3\sqrt{3}x = 0, x^2 + y^2 \pm 3\sqrt{3}y = 0$

C.  $x^2 + y^2 + 4\sqrt{3}x = 0, x^2 + y^2 \pm 4\sqrt{3}y = 0$

D. none

**Answer: A**



**Watch Video Solution**

63. The equation of the circle concentric with  $x^2 + y^2 - 2x + 8y - 23 = 0$  and passing through  $(2, 3)$  is

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

B.  $x^2 + y^2 - 2x + 8y - 33 = 0$

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

D.  $x^2 + y^2 + x + 8y + 33 = 0$

**Answer: B**



**Watch Video Solution**

64. The equation of the circle concentric with  $x^2 + y^2 - 6x + 4y - 3 = 0$  and having radius 5 is

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

B.  $x^2 + y^2 - 2x + 8y - 33 = 0$

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

D.  $x^2 + y^2 + x + 8y + 33 = 0$

**Answer: A**



[Watch Video Solution](#)

65. The equation of the circle concentric with the circle  $x^2 + y^2 - 6x + 12y + 15 = 0$  and of double its area is:

A.  $x^2 + y^2 - 6x + 12y - 15 = 0$

B.  $x^2 + y^2 - 6x + 12y - 30 = 0$

C.  $x^2 + y^2 - 6x + 12y - 25 = 0$

$$D. x^2 + y^2 - 6x + 12y - 20 = 0$$

**Answer: A**



**Watch Video Solution**

**66.** The equation of the circle passing through the points of intersection of the circle  $x^2 + y^2 - 2x + 4y - 20 = 0$ , the line  $4x - 3y - 10 = 0$  and the point  $(3, 1)$  is

A.  $x^2 + y^2 - 50x + 40y + 100 = 0$

B.  $2x^2 + 3y^2 + 100x + 40y + 100 = 0$

C.  $x^2 + y^2 + 50x - 40y + 100 = 0$

D.  $3x^2 + 4y^2 + 50x + 20y + 100 = 0$

**Answer: A**



**Watch Video Solution**

67. The equation of the circle passing through  $(0,0)$ ,  $(0,a)$ ,  $(a,0)$  is

A.  $x^2 + y^2 + ax + ay = 0$

B.  $x^2 + y^2 - ax - ay = 0$

C.  $x^2 + y^2 + 2ax + 2ay = 0$

D. none

**Answer: B**



[Watch Video Solution](#)

68. The equation of the circle passing through the points  $(1, 1)$ ,  $(2,-1)$ ,  $(3,2)$  is

A.  $x^2 + y^2 + 2x + 3y = 0$

B.  $x^2 + y^2 - 5x - y + 4 = 0$

C.  $x^2 + y^2 - x - y = 0$

D.  $x^2 + y^2 - ax - by = 0$

**Answer: B**



[Watch Video Solution](#)

**69.** The circle passing through the points  $(1, t)$ ,  $(t, 1)$  and  $(t, t)$  for all values of  $t$  passes through the point

A.  $(-1,-1)$

B.  $(-1,1)$

C.  $(1,-1)$

D.  $(1,1)$

**Answer: D**



[Watch Video Solution](#)

**70.** The centre of the circle passing through the points  $(a,b)$ ,  $(a,-b)$ ,  $(a+b,a-b)$  is

- A.  $\left(\frac{a^2 - b^2}{2b}, 0\right)$
- B.  $\left(\frac{\sqrt{a^2 - b^2}}{2a}, 0\right)$
- C.  $\left(\frac{a^2 + b^2}{2b}, 0\right)$
- D.  $\left(\frac{\sqrt{a^2 + b^2}}{2b}, 0\right)$

**Answer: C**



**Watch Video Solution**

**71.** The points (1, 1), (-6, 0), (-2, 2), (-2, -8) are

- A. concyclic
- B. collinear
- C. vertices of a square
- D. none

**Answer: A**



**Watch Video Solution**



72. If the points  $(2, 3)$ ,  $(0, 2)$ ,  $(4, 5)$  and  $(0, t)$  are concyclic, then  $t =$

A. 1 or 2

B. 1 or 17

C. 2 or 17

D. 1 or 2 or 17

**Answer: C**



[Watch Video Solution](#)

73. The points  $(2k, 3k)$ ,  $(1, 0)$ ,  $(0, 1)$  and  $(0, 0)$  lie on a circle for

A. all values of  $k$

B.  $0 \leq k \leq 1$

C.  $k < 0$

D.  $k=5/13$

**Answer: D**



[Watch Video Solution](#)

74. If  $(m_1, 1/m_1), i = 1, 2, 3, 4$  are concyclic points, then the value of  $m_1 m_2 m_3 m_4$  is

A. 1

B.  $-1$

C. 0

D. none

**Answer: A**



[Watch Video Solution](#)

75. The equation of the circle passing through the points (4, 1), (6, 5) and having the centre on the line  $4x+y-16=0$  is

A.  $x^2 + y^2 - 6x - 8y + 15 = 0$

B.  $15(x^2 + y^2) - 94x + 18y + 55 = 0$

C.  $x^2 + y^2 - 4x - 3y = 0$

D.  $x^2 + y^2 + 6x - 4y = 0$

**Answer: A**



[Watch Video Solution](#)

76. The equation of the circle having centre on the line  $3x + 4y = 5$  and passing through the points (1,-2), (4,-3) is

A.  $x^2 + y^2 - 4x - 3y = 0$

B.  $x^2 + y^2 + 6x + 2y + 5 = 0$

C.  $x^2 + y^2 + 6x - 2y + 5 = 0$

$$D. x^2 + y^2 - 6x + 2y + 5 = 0$$

**Answer: D**



**Watch Video Solution**

77. The equation of the circle passing through (2, 0) and (0, 4) and having the minimum radius is

A.  $x^2 + y^2 = 20$

B.  $x^2 + y^2 - 2x - 4y = 0$

C.  $x^2 + y^2 = 4$

D.  $x^2 + y^2 = 16$

**Answer: B**



**Watch Video Solution**

78. A circle with centre at (2, 4) is such that the line  $x+y+2=0$  cuts a chord of length 6. The radius of the circle is

A.  $\sqrt{11}$

B.  $\sqrt{21}$

C.  $\sqrt{31}$

D.  $\sqrt{41}$

**Answer: D**



[Watch Video Solution](#)

79. The equation of the circle passing through the origin and cuts of intercepts -6 and 4 on the axes as

A.  $x^2 + y^2 - 6x - 8y + 15 = 0$

B.  $15(x^2 + y^2) - 94x + 18y + 55 = 0$

C.  $x^2 + y^2 - 4x - 3y = 0$

$$D. x^2 + y^2 + 6x - 4y = 0$$

**Answer: D**



**Watch Video Solution**

**80.** The equations of the circles which pass through the origin and makes intercepts of lengths 4 and 8 on the x and y axis respectively, are :

$$A. x^2 + y^2 \pm 4x \pm 8y = 0$$

$$B. x^2 + y^2 \pm 2x \pm 4y = 0$$

$$C. x^2 + y^2 \pm 8x \pm 16y = 0$$

$$D. x^2 + y^2 \pm x \pm y = 0$$

**Answer: A**



**Watch Video Solution**

81. Circles are drawn through the point  $(2, 0)$  to cut intercepts of length 5 unit on the X-axis. If their centres lie in the first quadrant, then their equation is

A.  $x^2 + y^2 - 9x + 2ky + 14 = 0$

B.  $3x^2 + 3y^2 + 27x - 2ky + 42 = 0$

C.  $x^2 + y^2 - 9x - 2ky + 42 = 0$

D.  $x^2 + y^2 - 2kx - 9y + 14 = 0$

**Answer: A**



[Watch Video Solution](#)

82. The equation to the circle of radius 5, which pass through the two points on the x-axis which are at a distance of 4 from the origin is

A.  $x^2 + y^2 - 6x - 16 = 0$

B.  $x^2 + y^2 - 6y - 25 = 0$

C.  $x^2 + y^2 + 6y - 16 = 0$

D. none

**Answer: C**



**Watch Video Solution**

**83.** ABCD is a square with side a. If AB and AD are taken as coordinate axes.

Then the equation of the circle circumscribing the square is.

A.  $x^2 + y^2 - ax - ay = 0$

B.  $x^2 + y^2 + ax + ay = 0$

C.  $x^2 + y^2 - 2ax - 2ay = 0$

D.  $x^2 + y^2 + 2ax + 2ay = 0$

**Answer: A**



**Watch Video Solution**



84. ABCD is a rectangle with sides  $AB=p$ ,  $BC=q$ . If AB and AD are taken negative directions of coordinate axes. then the equation of the circle circumscribing the rectangle is

A.  $x^2 + y^2 + px + qy = 0$

B.  $x^2 + y^2 - px - qy = 0$

C.  $x^2 + y^2 + 2px + 2qy = 0$

D.  $x^2 + y^2 - 2px - 2qy = 0$

**Answer: A**



[Watch Video Solution](#)

85. The equation to the circle circumscribing the triangle formed by the lines  $x-y-2=0$ ,  $2x-3y+4=0$ ,  $3x-y+6=0$  is

A.  $x^2 + y^2 - 17x - 19y + 50 = 0$

B.  $3(x^2 + y^2) + 2x - 40y + 20 = 0$

$$C. x^2 + y^2 - 24x + 16y - 52 = 0$$

$$D. x^2 + y^2 + 12x + 12y + 7 = 0$$

**Answer: C**



[View Text Solution](#)

**86.** The equation of the circle circumscribing the triangle formed by  $x=0$ ,  $y=0$  and  $mx + ly = lm$  is

$$A. x^2 + y^2 - l^2 + m^2$$

$$B. x^3 + y^2 + lx + my = 0$$

$$C. x^3 + y^2 - lx - my = 0$$

$$D. x^2 + y^2 - lx - my + lm = 0$$

**Answer: C**



[Watch Video Solution](#)

87. The circumcentre of the triangle formed by the lines  $x+y=0$ ,  $x-y=0$  and  $lx+my=1$  is

- A.  $\left( \frac{1}{l^2 + m^2}, \frac{-m}{l^2 + m^2} \right)$
- B.  $\left( \frac{1}{l^2 - m^2}, \frac{-m}{l^2 - m^2} \right)$
- C.  $\left( \frac{1}{(l + m)^2}, \frac{-m}{(l - m)^2} \right)$
- D.  $\left( \frac{1}{(l + m)^2}, \frac{-m}{(l - m)^2} \right)$

**Answer: B**



[Watch Video Solution](#)

88. A rectangle ABCD is inscribed in a circle with a diameter lying along the line  $3y=x+10$ . If  $A=(-6,7)$ ,  $B=(4,7)$  then the area of the rectangle is

- A. 80 sq. unit
- B. 40 sq. unit
- C. 160 sq. unit

D. 20 sq. unit

**Answer: A**



[Watch Video Solution](#)

89. If  $4y=x+7$  is a diameter of the circumscribing circle of the rectangle ABCD and  $A(-3,4)$ ,  $B(5,4)$ . then the area of the rectangle.

A. 31 s.n

B. 32 s.n

C. 35 s.n

D. none

**Answer: B**



[Watch Video Solution](#)

90. A circle is inscribed in an equilateral triangle and a square is inscribed in the circle. The ratio of the area of the triangle to the area of the square is

A.  $\sqrt{3} : \sqrt{2}$

B.  $\sqrt{3} : 1$

C.  $3\sqrt{3} : 2$

D.  $3 : \sqrt{2}$

**Answer: C**



[Watch Video Solution](#)

91. A and B are fixed points and P moves such that  $PA = nPB$  and  $n \neq 1$ . The locus of P is

A. straight line

B. pair of straight lines

C. circle

D. none

**Answer: C**



[Watch Video Solution](#)

92. The locus of a point, which moves in such a way that the sum of the squares of its distances from the four sides of a square is constant ( $= 2c^2$ ) is

A. a straight line

B. a circle

C. an ellipse

D. parabola

**Answer: B**



[Watch Video Solution](#)

93. If a point moves so that sum of the square of the perpendiculars from it on the side of an equilateral triangle is constant then its locus is a

- A. line
- B. circle
- C. pair of lines
- D. none

**Answer: B**



[Watch Video Solution](#)

94. A square is inscribed in the circle  $x^2 + y^2 - 2x + 4y - 3 = 0$  with its sides parallel to the coordinate axes. One vertex of the square is

- A.  $(1 + \sqrt{2}, -2)$
- B.  $(1 - \sqrt{2}, -2)$

C.  $(1, -2 + \sqrt{2})$

D. none

**Answer: D**



[Watch Video Solution](#)

95. A square is inscribed in the circle  $x^2 + y^2 - 2x + 4y - 93 = 0$  with its sides parallel to the coordinate axes. One vertex of the square is

A. (5,8)

B. (5,3)

C. (8,-5)

D. (-1,5)

**Answer: B**



[Watch Video Solution](#)



96. The number of points here the circle  $x^2 + y^2 - 4x - 4y = 1$  cuts the sides of the rectangle formed by  $x=2$ ,  $x=5$ ,  $y=-1$  and  $y=5$  is

A. 5

B. 1

C. 2

D. 3

**Answer: D**



[Watch Video Solution](#)

97. The shortest distance from  $(-2, 14)$  to the circle  $x^2 + y^2 - 6x - 4y - 12 = 0$  is

A. 8

B. 4

C. 2

D. 1

**Answer: A**



**Watch Video Solution**

**98.** The longest distance from  $(-3, 2)$  to the circle

$$x^2 + y^2 - 2x + 2y + 1 = 0 \text{ is}$$

A. 8

B. 4

C. 18

D. 6

**Answer: D**



**Watch Video Solution**

99. The nearest point on the circle  $x^2 + y^2 - 6x + 4y - 12 = 0$  from  $(-5, 4)$  is

A. (1,1)

B. (-1,1)

C. (-1,2)

D. (-2,2)

**Answer: B**



[Watch Video Solution](#)

100. The furthest point the circle  $x^2 + y^2 - 4x + 6y - 12 = 0$  from  $(-13, 17)$  is

A. (5,-7)

B. (-1,1)

C. (-1,2)

D. (-2,2)

**Answer: A**



[Watch Video Solution](#)

**101.** The sum of the minimum and maximum distances of the point (4,-3) to the circle  $x^2 + y^2 + 4x - 10y - 7 = 0$

A. 10

B. 12

C. 16

D. 20

**Answer: D**



[Watch Video Solution](#)

102. The least distance of the line  $8x-4y+73=0$  from the circle  $16x^2 + 16y^2 + 48x - 8y - 43 = 0$

A.  $\sqrt{5}/2$

B.  $2\sqrt{5}$

C.  $3\sqrt{5}$

D.  $4\sqrt{5}$

**Answer: B**



[Watch Video Solution](#)

103. The locus of the point whose shortest distance from the circle  $x^2 - 2x + 6y - 6 = 0$  is equal to its distance from the line  $x-3=0$  is

A.  $x^2 + 6y - 4x - 9 = 0$

B.  $y^2 - 6y + 4x + 9 = 0$

C.  $x^2 - 6y - 4x - 9 = 0$

$$D. y^2 + 6y - 4x + 9 = 0$$

**Answer: D**



[Watch Video Solution](#)

**104.** The circle  $x^2 + y^2 - 4x - 4y + 4 = 0$  is inscribed in a triangle which has two of its sides along the coordinate axes. The locus of the circumcentre of the triangle is  $x + y - xy + k(x^2 + y^2)^{1/2} = 0$ . Then  $k =$

A. 0

B. 1

C. -1

D. 2

**Answer: B**



[View Text Solution](#)

105. A circle of radius unit is inscribed in a triangle whose two of its sides are along coordinate axes. The locus of the circumcentre of the triangle is

A.  $x + y - xy = \sqrt{x^2 + y^2}$

B.  $\sqrt{x^2 + y^2} = x + y + xy$

C.  $x + y - 2xy + \sqrt{x^2 + y^2} = 0$

D.  $\sqrt{x^2 + y^2} = 2xy + x + y$

**Answer: C**



[Watch Video Solution](#)

106. The equation to the side BC of  $\triangle ABC$  is  $x + 5 = 0$ . If  $(-3, 2)$  is the orthocentre of  $\triangle ABC$ . The point where the altitude through A meets the circumcircle of the triangle is.

A.  $(2,7)$

B.  $(2,-7)$

C. (-7,2)

D. (7,-2)

**Answer: C**



[Watch Video Solution](#)

107. Given  $A=(0,6), B=(4,0), C=(-3,0), D=(0,-2)$  concyclic points, the orthocentre of  $\triangle ABC$  is

A. (2,0)

B. (0,-2)

C. (0,2)

D. (2,2)

**Answer: C**



[Watch Video Solution](#)



108. P is a point on the circuncircle of an equilateral triangle ABC of side a.

Then  $PA^2 + PB^2 + PC^2 =$

A.  $4a^2$

B.  $3a^2$

C.  $2a^2$

D.  $a^2$

Answer: C



Watch Video Solution

109. Let P be a point on the circle  $x^2 + y^2 = 9$ , Q a point on the line and the perpendicular bisector of PQ be the line  $x-y+1=0$ . Then the coordinates of P are

A. (3,0)

B. (0,3)

C.  $(72/25, -21/25)$

D.  $(72/25, 21/25)$

**Answer: A**



[View Text Solution](#)

**110.** The equation of the image of the circle  $x^2 + y^2 - 6x - 4y + 12 = 0$  by the line mirror  $x+y-1=0$  is

A.  $x^2 + y^2 + 2x + 4y + 4 = 0$

B.  $x^2 + y^2 - 2x + 4y + 4 = 0$

C.  $x^2 + y^2 + 2x + 4y - 4 = 0$

D.  $x^2 + y^2 + 2x - 4y + 4 = 0$

**Answer: A**



[Watch Video Solution](#)

## Exercise 1B(Circle-Line)

1. The equation of the tangent to the circle  $x^2 + y^2 - 2x - 4y + 3 = 0$  at  $(2, 3)$  is

A.  $x+2y-10=0$

B.  $x+y+5=0$

C.  $3x+2y-13=0$

D.  $2x+3y-23=0$

**Answer: B**



[Watch Video Solution](#)

2. The equation of the tangent at  $(1, 1)$  to the circle  $2x^2 + 2y^2 - 2x - 5y + 3 = 0$  is

A.  $2x+y-1=0$

B.  $2x-y-1=0$

C.  $x+2y-1=0$

D.  $2x+y+1=0$

**Answer: B**



[Watch Video Solution](#)

3. The equation of the normal to the circle  $x^2 + y^2 + 6x + 4y - 3 = 0$  at (1,-2) to is

A.  $y+1=0$

B.  $y+2=0$

C.  $y+3=0$

D.  $y-2=0$

**Answer: B**



[Watch Video Solution](#)

4. The equation to the normal to the circle  $x^2 + y^2 - 2x - 2y = 0$  at the point (3,1) on it is

A.  $x=1$

B.  $y=2$

C.  $y=1$

D.  $y=-1$

**Answer: C**



[Watch Video Solution](#)

5. The normal of the circle  $(x - 2)^2 + (y - 1)^2 = 16$  which bisects the chord cut off by the line  $x-2y-3=0$  is

A.  $2x+y+3=0$

B.  $2x+y-4=0$

C.  $2x+y-5=0$

D. none

**Answer: C**



[Watch Video Solution](#)

6. The normal drawn at  $P(-1, 2)$  on the circle  $x^2 + y^2 - 2x - 2y - 3 = 0$  meets the circle at another point  $Q$ . Then the coordinates of  $Q$  are

A. (3,0)

B. (-3,0)

C. (2,0)

D. (-2,0)

**Answer: A**



[Watch Video Solution](#)

7. If  $3x+4y+k=0$  is a tangent to the circle  $x^2 + y^2 = 16$  then  $k =$

A.  $\pm 20$

B.  $-1, -5$

C.  $\pm 2$

D. 4

**Answer: A**



[Watch Video Solution](#)

8. If the line  $y=2x+c$  is a tangent to the circle  $x^2 + y^2 = 5$  then a value of  $c$  is

A. 2

B. 3

C. 4

D. 5

**Answer: D**



**Watch Video Solution**

9. If  $x+y+k=0$  is a tangent to the circle  $x^2 + y^2 - 2x - 4y + 3 = 0$  then  $k =$

A.  $\pm 20$

B.  $-1, -5$

C.  $\pm 2$

D. 4

**Answer: C**



**Watch Video Solution**

10. The line  $x \cos \alpha + y \sin \alpha = p$  touches the circle  $x^2 + y^2 - 2ax \cos \alpha - 2ay \sin \alpha = 0$ . then  $p =$



A.  $a$

B.  $2a$

C.  $-a$

D.  $a/2$

**Answer: B**



**Watch Video Solution**

11. The slope  $m$  of a tangent through the point  $(7,1)$  to the circle  $x^2 + y^2 = 25$  satisfies the equation.

A.  $12m^2 + 7m - 12 = 0$

B.  $12m^2 + 7m + 9 = 0$

C.  $12m^2 - 7m - 12 = 0$

D.  $9m^2 + 12m + 16 = 0$

**Answer: C**

 [Watch Video Solution](#)

12. The equation of the tangent to the circle  $x^2 + y^2 + 2x + 2y - 7 = 0$  which makes  $45^\circ$  with the x axis is

A.  $y = x\sqrt{3} + 1$

B.  $y = x \pm \sqrt{3}$

C.  $y = x \pm 3\sqrt{2}$

D.  $y = x\sqrt{2} + 3$

**Answer: C**

 [Watch Video Solution](#)

13. Equation of the tangent to the circle  $x^2 + y^2 = 3$ , which is inclined at  $60^\circ$  with the x-axis is

A.  $y = \sqrt{3}x + 2\sqrt{3}$

B.  $y\sqrt{3} = x + 2\sqrt{3}$

C.  $y = -x\sqrt{3} + 4\sqrt{3}$

D. none

**Answer: A**



**Watch Video Solution**

14. The radius of the circle which has the lines  $x + y - 1 = 0$  ,  
 $x + y - 9 = 0$  as tangent is

A.  $\sqrt{2}$

B.  $2\sqrt{2}$

C.  $3\sqrt{2}$

D.  $4\sqrt{2}$

**Answer: B**



**Watch Video Solution**

15. The radius of any circle touching the lines  $3x - 4y + 5 = 0$ ,  $6x - 8y - 9 = 0$  is

- A. 1
- B.  $23/15$
- C.  $20/19$
- D.  $19/20$

**Answer: D**



[Watch Video Solution](#)

16. If the lines  $3x+4y-14=0$  and  $6x+8y+7=0$  are both tangents to a circle, then its radius is

- A. 7
- B.  $7/2$

C.  $\frac{7}{4}$

D.  $\frac{7}{6}$

**Answer: C**



[Watch Video Solution](#)

17. How many circles can be drawn each touching all the three lines  $x+y=1$ ,

$x+1=y$ ,  $7x-y=6$

A. 1

B. 2

C. 3

D. 4

**Answer: D**



[Watch Video Solution](#)

18. The number of circles that touches all the three lines  $x+y-1=0$ ,  $x-y-1=0$  and  $y+1=0$  is

A. 2

B. 3

C. 4

D. 1

**Answer: C**



[Watch Video Solution](#)

19. If the equation of one tangent to the circle with centre  $(2,-1)$  from the origin is  $3x+y=0$ , then the equation of the other tangent through the origin is

A.  $3x-y=0$

B.  $x+3y=0$

C.  $x-3y=0$

D.  $x+2y=0$

**Answer: C**



[Watch Video Solution](#)

20. If  $y=3x$  is a tangent to a circle with centre  $(1,1)$  then the other tangent drawn through  $(0,0)$  to the circle is

A.  $3y=x$

B.  $y=-3x$

C.  $y=2x$

D.  $y=-2x$

**Answer: A**



[Watch Video Solution](#)

21. The equation of the tangents to the circle  $x^2 + y^2 - 4x - 6y - 12 = 0$  and parallel to  $4x-3y=1$  are

A.  $4x+3y+14=0, 4x+3y+16=0$

B.  $4x-2y-24=0, 4x-3y+26=0$

C.  $x-y-14=0, x-y+16=0$

D.  $4x-3y+34=0, 4x-3y+16=0$

**Answer: B**



[Watch Video Solution](#)

22. The equation of the tangent to the circle  $x^2 + y^2 + 8x - 4y - 5 = 0$  and perpendicular to  $2x+3y+5=0$  are

A.  $2x + 3y + 2 \pm 5\sqrt{13} = 0$

B.  $2x + 3y + 2 + 2\sqrt{13} = 0$

C.  $x + y + 12 - 3\sqrt{13} = 0$



$$D. 3x - 2y + 16 \pm 5\sqrt{13} = 0$$

**Answer: D**



**Watch Video Solution**

**23.** The equation of the tangents to the circle

$x^2 + y^2 - 2x + 8y - 23 = 0$  and having slope 3 are

A.  $x - y + 13 = 0, x - y - 27 = 0$

B.  $3x+3y+33=0, 3x+y-27=0$

C.  $3x-y+23=0, 3x-y-37=0$

D.  $3x-y+13=0, 3x-y-27=0$

**Answer: D**



**Watch Video Solution**

24. The equation of the tangent to the circle  $x^2 + y^2 = 16$  which are inclined at an angle of  $60^\circ$  to the x-axis is

A.  $y = \sqrt{3}x \pm 8$

B.  $x = \sqrt{3}x \pm 8$

C.  $2y = \sqrt{3}x - 8$

D.  $2x = \sqrt{3}x - 8$

**Answer: A**



[Watch Video Solution](#)

25. The equation of the tangent to the circle  $x^2 + y^2 + 4x - 4y + 4 = 0$  which make equal intercepts on the positive coordinates, is

A.  $x + y = 2$

B.  $x + y = \sqrt{2}$

C.  $x + y = 2\sqrt{2}$

D. none

**Answer: C**

 [Watch Video Solution](#)

26.  $x^2 + y^2 - 4x - 6y + 9 = 0$  and  $(x + 3)^2 + (y + 2)^2 = 25$  are two circles. The line  $x=2$  is a

A. tangent for both

B. diameter for both

C. tangent to the first and diameter of the second

D. diameter of first and tangent to second

**Answer: D**

 [Watch Video Solution](#)

27. P(-9,-1) is a point on the circle  $x^2 + y^2 + 4x + 8y - 38 = 0$ . The equation to the tangent at the other end of the diameter through P is

A.  $7x-3y=60$

B.  $7x+3y=56$

C.  $7x-3y=56$

D.  $7x+3y=60$

**Answer: C**



[Watch Video Solution](#)

28. The area of the triangle formed with the coordinate axes and the tangent drawn at the point (-12,5) on the circle  $x^2 + y^2 = 169$  is

A.  $\left(\frac{625}{24}\right)$

B.  $\left(\frac{28561}{120}\right)$

C.  $\frac{225}{23}$

D.  $\frac{8561}{20}$

**Answer: B**



**Watch Video Solution**

29. The equations of the tangents to the circles  $x^2 + y^2 = a^2$  which makes with axes a triangle of area  $a^2$  is

A.  $y = \pm x \pm 2a$

B.  $y = \pm x \pm \sqrt{3}a$

C.  $y = \pm x \pm a$

D.  $y = \pm x \pm a\sqrt{2}$

**Answer: D**



**Watch Video Solution**

30. The area of triangle formed by the positive x-axis and the tangent and the normal at  $(1, \sqrt{3})$  to the circle  $x^2 + y^2 = 4$  is

A.  $3\sqrt{2}$

B.  $2\sqrt{3}$

C.  $5\sqrt{2}$

D. none

**Answer: B**



[Watch Video Solution](#)

31. Let A be the centre of the circle  $x^2 + y^2 - 2x - 4y - 20 = 0$ . Suppose that the tangent at the points B(1,7) and D(4,-2) on the circle meet at the point C. The area of the quadrilateral ABCD is

A. 75 sq. unit

B. 145 sq. unit

C. 150 sq. unit

D. 50 sq. unit

**Answer: A**



[Watch Video Solution](#)

32. If a tangent drawn from the point  $(4,0)$  to the circle  $x^2 + y^2 = 8$  touches it at a point A in the first quadrant, then the coordinates of another point B on the circle such that  $AB=4$  are

A.  $(2,-2)$  or  $(-2,2)$

B.  $(1,-2)$  or  $(-2,1)$

C.  $(-1,1)$  or  $(1,-1)$

D.  $(3,-2)$  or  $(-3,2)$

**Answer: A**



[Watch Video Solution](#)

33. The tangents at  $(3,4)$ ,  $(4,-3)$  to the circle  $x^2 + y^2 = 25$  are

- A. coincide
- B. parallel
- C. perpendicular
- D. at an angle of  $45^\circ$

**Answer: C**



**Watch Video Solution**

34. If the tangents at  $(5,12)$  and  $(12,-5)$  to a circle are perpendicular to each other then the radius of the circle is

- A. 12
- B. 5
- C. 13



D. none

**Answer: C**



**Watch Video Solution**

**35.** The locus of the point of intersection of two perpendicular tangents to the circle  $x^2 + y^2 = a^2$  is

A.  $x^2 + y^2 = a^2/2$

B.  $x^2 + y^2 = a^2/3$

C.  $x^2 + y^2 = 2a^2$

D.  $x^2 + y^2 = 3a^2$

**Answer: C**



**Watch Video Solution**

36. The locus of the point of intersection of the perpendicular tangents to the circle  $x^2 + y^2 = a^2$  is

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

B.  $x^2 + y^2 - 4x + 6y - 17 = 0$

C.  $x^2 + y^2 - 4x + 6y - 37 = 0$

D.  $x^2 + y^2 - 4x + 6y + 13 = 0$

**Answer: C**



[View Text Solution](#)

37. The locus of the point of intersection of the perpendicular tangents to the circle  $x^2 + y^2 = a^2, x^2 + y^2 = b^2$  is

A.  $x^2 + y^2 = a^2 + b^2$

B.  $x^2 + y^2 = a^2 - b^2$

C.  $x^2 + y^2 = (a + b)^2$

$$D. x^2 + y^2 = (a - b)^2$$

**Answer: A**



[Watch Video Solution](#)

**38.** If the tangent from a point P to the circle  $x^2 + y^2 = 1$  is perpendicular to the tangent from P to the circle  $x^2 + y^2 = 3$ , then the locus of P is

- A. a circle of radius
- B. a circle of radius
- C. a circle of radius
- D. none

**Answer: A**



[Watch Video Solution](#)

39. The locus of the point of intersection of two tangents drawn to the circle  $x^2 + y^2 = a^2$  which makes a constant angle  $\alpha$  to each other is

A.  $(x^2 + y^2 - a^2)^2 = 4a^2(x^2 + y^2 + a^2)\tan^2 \alpha$

B.  $(x^2 + y^2 - a^2)^2 = 4a^2(x^2 + y^2 + a^2)\cot^2 \alpha$

C.  $(x^2 + y^2 - 2a^2)^2 = 4a^2(x^2 + y^2 - a^2)\cot^2 \alpha$

D.  $(x^2 + y^2 - 2a^2)^2 = 4a^2(x^2 + y^2 - a^2)$

Answer: C



[View Text Solution](#)

40. The locus of the feet of the perpendicular drawn from the point  $(a,0)$  on tangent to the circle  $x^2 + y^2 = a^2$  is

A.  $(x^2 + y^2 + ax)^2 = a^2[y^2 + (x - a)^2]$

B.  $(x^2 + y^2 - ax)^2 = a^2[y^2 + (x - a)^2]$

C.  $a^2(x + y)^2 - (ax)^2 = a^2[(x - y)^2 + a^2]$

D. none

**Answer: B**



[Watch Video Solution](#)

**41.** The locus of the middle points of portions of the tangents to the circle  $x^2 + y^2 = a^2$  terminated by the axes is

A.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{4}{a^2}$

B.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{2}{a^2}$

C.  $\frac{1}{x^2} - \frac{1}{y^2} = \frac{4}{a^2}$

D.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{a^2}$

**Answer: A**



[Watch Video Solution](#)

42. If  $4t^2 - 5m(2) + 6l + 1 = 0$ , then the line  $lx+my+1=0$  touches the circle

A.  $x^2 + y^2 + 6x - 4 = 0$

B.  $x^2 + y^2 - 6x + 4 = 0$

C.  $x^2 + y^2 + 5x + 4 = 0$

D.  $x^2 + y^2 - 2x + 5 = 0$

**Answer: B**



[Watch Video Solution](#)

43. The locus of the point  $(l,m)$  if the line  $lx+my=1$  touches the circles

$x^2 + y^2 = a^2$  is

A.  $x^2 + y^2 = 2a^2$

B.  $2x^2 + 2y^2 = a^2$

C.  $a^2(x^2 + y^2) = 1$

$$D. a^2(x^2 + y^2) = 2$$

**Answer: C**



**Watch Video Solution**

**44.** A tangent to the circle  $x^2 + y^2 = 4$  meets the coordinate axes at P and Q. The locus of midpoint of PQ is

A.  $\frac{1}{x^2} + \frac{1}{y^2} = 1$

B.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{4}$

C.  $\frac{1}{x^2} - \frac{1}{y^2} = \frac{1}{2}$

D. none

**Answer: A**



**Watch Video Solution**

45. The tangents to  $x^2 + y^2 = a^2$  having inclinations  $\alpha$  and  $\beta$  intersect at P. If  $\cot \alpha + \cot \beta = 0$ , then the locus of P is

A.  $x+y=0$

B.  $x-y=0$

C.  $xy=0$

D. none

**Answer: C**



[Watch Video Solution](#)

46. A line segment  $AM=a$  moves in the XOY plane such that AM is parallel to the X-axis. If A moves along the circle  $x^2 + y^2 = a^2$ , then the locus of M is

A.  $x^2 + y^2 = 4a^2$

B.  $x^2 + y^2 = 2ax$



C.  $x^2 + y^2 = 2ay$

D.  $x^2 + y^2 = 2ax + 2ay$

**Answer: B**



**Watch Video Solution**

47. The circle  $4x^2 + 4y^2 - 12x - 12y + 9 = 0$

A. touches both the axes

B. touches the x-axis only

C. touches the y-axis only

D. does not touch the axes

**Answer: A**



**Watch Video Solution**

48. If  $x^2 + y^2 - 4x - 6y + k = 0$  touches x-axis then k=

A.  $\pm 20$

B.  $-1, -5$

C.  $\pm 2$

D. 4

**Answer: D**



[Watch Video Solution](#)

49. If  $x^2 + y^2 + 6x + 2ky + 25 = 0$  to touch y-axis then k=

A.  $\pm 20$

B.  $+5, -5$

C.  $\pm 2$

D. 4

**Answer: B**



**Watch Video Solution**

**50.** Find the equation of the circle with centre

$(-3, 4)$  and touching  $y$  - axis.

A.  $x^2 + y^2 - 4x - 6y + 4 = 0$

B.  $x^2 + y^2 + 6x - 8y + 16 = 0$

C.  $x^2 + y^2 - 8x - 6y + 21 = 0$

D.  $x^2 + y^2 - 24x - 10y + 144 = 0$

**Answer: A**



**Watch Video Solution**

**51.** Find the equation of the circle with centre

$(-3, 4)$  and touching  $y$  - axis.

A.  $x^2 + y^2 - 4x - 6y + 4 = 0$

B.  $x^2 + y^2 + 6x - 8y + 16 = 0$

C.  $x^2 + y^2 - 8x - 6y + 21 = 0$

D.  $x^2 + y^2 - 24x - 10y + 144 = 0$

**Answer: B**

 [Watch Video Solution](#)

52. The equation of a circle with centre (4,1) and having  $3x+4y-1=0$  as tangent is

A.  $x^2 + y^2 - 8x - 2y - 8 = 0$

B.  $x^2 + y^2 - 8x - 2y + 8 = 0$

C.  $x^2 + y^2 - 8x + 2y + 8 = 0$

D.  $x^2 + y^2 - 8x - 2y + 4 = 0$

**Answer: B**

 [Watch Video Solution](#)

53. The equation of the circle touching both axes, lying in the first quadrant and having the radius 3 is

A.  $x^2 + y^2 - 6x - 6y + 9 = 0$

B.  $x^2 + y^2 + 10x - 10y + 25 = 0$

C.  $x^2 + y^2 + 2x + 2y + 1 = 0$

D.  $x^2 + y^2 - 4x + 4y + 4 = 0$

**Answer: A**

 [Watch Video Solution](#)

54. The equation of the circle of radius 3 that lies in the fourth quadrant and touching the lines  $x=0$  and  $y=0$  is

A.  $x^2 + y^2 - 6x + 6y + 9 = 0$

$$B. x^2 + y^2 - 6x - 6y + 9 = 0$$

$$C. x^2 + y^2 + 6x - 6y + 9 = 0$$

$$D. x^2 + y^2 + 6x + 6y + 9 = 0$$

**Answer: A**



**Watch Video Solution**

55. The equation of the circle touching both the axes lying in the third quadrant and having the radius 3 is

$$A. x^2 + y^2 - 6x - 6y + 9 = 0$$

$$B. x^2 + y^2 + 10x - 10y + 25 = 0$$

$$C. x^2 + y^2 + 6x - 6y + 9 = 0$$

$$D. x^2 + y^2 + 6x + 6y + 9 = 0$$

**Answer: D**



**Watch Video Solution**

56. The equation of the circle passing through (2,1) and touching the coordinate axes is

A.  $x^2 + y^2 - 2x - 2y + 1 = 0$

B.  $x^2 + y^2 + 2x + 2y + 1 = 0$

C.  $x^2 + y^2 - 2x - 2y - 1 = 0$

D.  $x^2 + y^2 + 2x + 2y - 1 = 0$

**Answer: A**



**Watch Video Solution**

57. The equation of the circles touching the coordinate axes and passing through the point (k,2k) where  $k > 0$  is

A.

$$2x^2 + 2y^2 + 12kx - 12ky + k^2 = 0, 4x^2 + 4y^2 - 10kx - 10ky + 25k^2 = 0$$

B.

$$x^2 + y^2 - kx - 2ky + k^2 = 0, x^2 + y^2 - 10kx - 10ky + 25k^2 = 0$$

C.

$$x^2 + y^2 + 2kx + 2ky + k^2 = 0, x^2 + y^2 + 10kx + 10ky + 25k^2 = 0$$

D.

$$x^2 - y^2 - 2kx - 2ky - k^2 = 0, x^2 - y^2 - 10kx - 10ky - 25k^2 = 0$$

**Answer: B**



**Watch Video Solution**

**58.** The equation of the circles touching the axes at (5,0) and (0,5) is

A.  $x^2 + y^2 - 5x - 10y + 7 = 0$

B.  $2(x^2 + y^2) - 5x - 5y + 7 = 0$

C.  $x^2 + y^2 - 10x - 10y + 25 = 0$

D. none



**Answer: C**



**Watch Video Solution**

**59.** The equation of the circles touch the x-axis (3,0) and make an intercept 8 units on y-axis is

A.  $x^2 + y^2 + 10x - 8y - 16 = 0$

B.  $x^2 + y^2 - 6x \pm 10y + 9 = 0$

C.  $x^2 + y^2 - 10x \pm 26y + 25 = 0$

D.  $x^2 + y^2 \pm 26 + 24y + 144 = 0$

**Answer: B**



**Watch Video Solution**

**60.** The centre of the circle touching the y-axis at (0,3) and making an intercept 2 unit on positive x-axis is

A.  $(10, \sqrt{3})$

B.  $(\sqrt{3}, 10)$

C.  $(\sqrt{10}, 3)$

D.  $(3, \sqrt{10})$

**Answer: C**



**Watch Video Solution**

**61.** Equation of the circle touching the y-axis at  $(0, \sqrt{3})$  and cuts the x-axis in the points  $(-1,0)$  and  $(-3,0)$  is

A.  $x^2 + y^2 + 4x - 2y\sqrt{3} + 3 = 0$

B.  $x^2 + y^2 - 4x + 2y\sqrt{3} = 0$

C.  $x^2 + y^2 = 0$

D. none

**Answer: A**



Watch Video Solution

62. The equation of the circles which touch the x-axis at the origin and the line  $4x-3y+24=0$

A.  $x^2 + y^2 - 6y = 0, x^2 + y^2 + 24y = 0$

B.  $x^2 + y^2 + 2y = 0, x^2 + y^2 - 18y = 0$

C.  $x^2 + y^2 + 18x = 0, x^2 + y^2 - 8x = 0$

D.  $x^2 + y^2 + 4x = 0, x^2 + y^2 - 16x = 0$

Answer: A



Watch Video Solution

63. The equation of the circles which touch the y-axis at the origin and the line  $5x+12y-72=0$  is

A.  $x^2 + y^2 - 6y = 0, x^2 + y^2 + 24y = 0$

B.  $x^2 + y^2 + 2y = 0, x^2 + y^2 - 18y = 0$

C.  $x^2 + y^2 + 18x = 0, x^2 + y^2 - 8x = 0$

D.  $x^2 + y^2 + 4x = 0, x^2 + y^2 - 16x = 0$

**Answer: C**



**Watch Video Solution**

**64.** The equation of the circle touching the y-axis at the origin and passing through (b,c) is

A.  $b(x^2 + y^2) = x(b^2 - c^2)$

B.  $b(x^2 + y^2) = y(b^2 + c^2)$

C.  $b(x^2 + y^2) = x(b^2 + c^2)$

D.  $b(x^2 + y^2) = y(b^2 - c^2)$

**Answer: C**



**Watch Video Solution**

65. The equation of the circles touching the coordinate axes and the line

$$x+2=0$$

A.  $x^2 + y^2 + 2x + 2y - 1 = 0$

B.  $x^2 + y^2 - 2x + 2y + 1 = 0$

C.  $x^2 + y^2 + 2x + 2y + 1 = 0$

D.  $x^2 + y^2 + 2x - 2y - 1 = 0$

**Answer: C**



**Watch Video Solution**

66. The equation of a circle touching the coordinate axes and the line

$$3x - 4y = 12$$
 is

A.  $x^2 + y^2 - 6x - 6y + 9 = 0$

B.  $x^2 + y^2 - 6x - 6y + 9 = 0$

C.  $x^2 + y^2 + 6x - 6y + 9 = 0$

D.  $x^2 + y^2 + 6x + 6y + 9 = 0$

**Answer: B**



**Watch Video Solution**

67. The equation of the circle in the first quadrant which touch the co-ordinate axes and the line  $3x + 4y = 12$  is

A.  $x^2 + y^2 - 6x - 6y + 9 = 0$

B.  $x^2 + y^2 - 6x - 6y + 9 = 0$

C.  $x^2 + y^2 + 6x + 6y + 19 = 0$

D.  $x^2 + y^2 - 2x - 2y + 1 = 0$

**Answer: D**



**Watch Video Solution**

68. The equation of the circle which touches the lines  $x=0$ ,  $y=0$  and  $x=c$  is

A.  $x^2 + y^2 = cx - cy + c^2 = 0$

B.  $x^2 + y^2 - 2cx - 2cy + c^2 = 0$

C.  $x^2 + y^2 + cx + cy + c^2/4 = 0$

D.  $x^2 + y^2 - cx - cy + c^2/4 = 0$

**Answer: D**



**Watch Video Solution**

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

A.  $(5,-2)$

B.  $(-2,5)$

C.  $(-5,2)$

D.  $(2,-5)$

**Answer: A**



**Watch Video Solution**

**70.** ABCD is a square  $2a$  unit. Taking AB and AD as axes of coordinates, the equation to the circle which touches the sides of the square is

A.  $x^2 + y^2 + ax + ay + a^2 = 0$

B.  $x^2 + y^2 + 2ax + 2ay + a^2 = 0$

C.  $x^2 + y^2 - ax - ay + a^2 = 0$

D.  $x^2 + y^2 - 2ax - 2ay + a^2 = 0$

**Answer: D**



**Watch Video Solution**

**71.** The equation of the circle whose centre lies in the first quadrant and which touches the coordinate axes and the line



$(x/3) + (y/4) = 1$  is  $x^2 + y^2 - 2cx - 2cy + c^2 = 0$  then  $c =$

A. 4

B. 2

C. 3

D. 6

**Answer: D**



[Watch Video Solution](#)

72. The equation of the circle having centre on the line  $x+y=1$  and touching the lines  $3x-4y+2=0$ ,  $4x+3y+7=0$

A.  $x^2 + y^2 + 2x + 4y + 24/25 = 0$

B.  $x^2 + y^2 - 2x - 4y - 44/25 = 0$

C.  $2x^2 + 2y^2 + x - y + 14/25 = 0$

D.  $x^2 + y^2 + 2x - 4y + 44/25 = 0$

**Answer: D**



**Watch Video Solution**

**73.** The equation to the circles which touch the lines  $3x-4y+1=0$ ,  $4x+3y-7=0$  and pass through  $(2,3)$  are

A.  $x^2 + y^2 - 4x - 16y + 43 = 0$ ,  $5x^2 + 5y^2 - 12x - 24y + 31 = 0$

B.  $x^2 + y^2 + 4x - 16y - 43 = 0$ ,  $5x^2 + y^2 - 12x - 24y + 31 = 0$

C.  $x^2 + y^2 - 4x - 16y + 43 = 0$ ,  $5x^2 + 5y^2 + 12x + 24y + 31 = 0$

D.  $x^2 + y^2 + 4x + 16y - 43 = 0$ ,  $5x^2 + 5y^2 + 12x + 24y + 31 = 0$

**Answer: A**



**View Text Solution**

**74.** The equation of the circle which has a radius 5 and tangent as the line  $3x-4y+5=0$  at  $(1,2)$  is

A.  $x^2 + y^2 + 2x - 8y + 4 = 0, x^2 + y^2 - 6x + 4y = 0$

B.  $x^2 + y^2 + 4x - 12y + 15 = 0, x^2 + y^2 - 8x + 4y - 5 = 0$

C.

$2x^2 + y^2 - 14x - 36y + 43 = 0, 5x^2 + 5y^2 + 12x + 24y + 31 = 0$

D.

**Answer: B**



**Watch Video Solution**

**75.** The equation of the circle passing through the point (1,-2) and having its centre on the line  $2x-y-14=0$  and touching the line  $4x+3y-23=0$  is

A.  $x^2 + y^2 + 8x + 12y + 27 = 0$

B.  $x^2 + y^2 - 12y + 27 = 0$

C.  $x^2 + y^2 - 8x - 12y + 27 = 0$

D.  $x^2 + y^2 - 8x + 12y + 27 = 0$

**Answer: D**



[Watch Video Solution](#)

**76.** The equation of the circles which touch the y-axis at a distance 4 from the origin and make an intercept 6 on the x-axis is

A.  $2x^2 + 2y^2 \pm 40 \pm 8y + 56 = 0$

B.  $2x^2 + 2y^2 - 10x \pm 18y + 36 = 0$

C.  $11x^2 + 11y^2 - 10x - 8y - 16 = 0$

D.  $x^2 + y^2 \pm 10x \pm 8y, 16 = 0$

**Answer: D**



[Watch Video Solution](#)

**77.** Consider a family of circles which are passing through the point (-1,1) and are tangent to x-axis. If (h,k) are the co-ordinates of the centre of the

circles, then the set of values of  $k$  is given by the interval.

A.  $0 < k < \frac{1}{2}$

B.  $k \geq \frac{1}{2}$

C.  $-\frac{1}{2} \leq k \leq \frac{1}{2}$

D.  $k \leq \frac{1}{2}$

**Answer: B**



**Watch Video Solution**

**78.** A variable circle passes through the fixed point  $(2,0)$  and touches the  $y$ -axis. Then the locus of its centre is

A. a parabola

B. a circle

C. an ellipse

D. a hyperbola

**Answer: A**



**Watch Video Solution**

**79.** If the line  $x+3y=0$  is tangent at  $(0,0)$  to the circle of radius 1, then the centre of one such circle is

A.  $(3,0)$

B.  $\left(\frac{-1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$

C.  $\left(\frac{3}{\sqrt{10}}, \frac{-3}{\sqrt{10}}\right)$

D.  $\left(\frac{1}{\sqrt{10}}, \frac{3}{\sqrt{10}}\right)$

**Answer: D**



**Watch Video Solution**

**80.** O is the origin and OA, OB are a pair of tangents to the  $x^2 + y^2 + 2gx + 2fy + c = 0, c > 0$ , then the equation to the circum

circle of  $\triangle OAB$  is

A.  $x^2 + y^2 - gx - fy = 0$

B.  $x^2 + y^2 + gx + fy = 0$

C.  $x^2 + y^2 - gx = 0$

D.  $x^2 + y^2 + fy = 0$

**Answer: B**



**Watch Video Solution**

**81.** If  $O$  is the origin  $OP$ ,  $OQ$  are the tangent to the circle

$x^2 + y^2 + 2gx + 2fy + c = 0$  then the circumcentre of the  $\triangle OPQ$  is

A.  $(-g, -f)$

B.  $(-f, -g)$

C.  $(-g/2, -f/2)$

D.  $(-f/2, -g/2)$

**Answer: C**



**Watch Video Solution**

**82.** Tangents PA and PB are drawn from P(a,b) to the circle  $x^2 + y^2 = r^2$ .

The equation to the circum circle of  $\triangle PAB$  is

A.  $x^2 + y^2 - x - y = 0$

B.  $x^2 + y^2 - ax - by = 0$

C.  $x^2 + y^2 - 2ax - 2by = 0$

D. none

**Answer: B**



**Watch Video Solution**

**83.** A circle touches x-axis and cuts off a constant length 2l from the y-axis.

The locus of its centre of



A.  $x^2 + y^2 = l^2$

B.  $x^2 + y^2 = 2l^2$

C.  $x^2 + y^2 = 3l^2$

D.  $x^2 - y^2 + l^2 = 0$

**Answer: D**



**Watch Video Solution**

**84.** A circle passes through P(a,b) and touches the x-axis. The locus of the other end of diameter of the circle through P is

A.  $(x - a)^2 = 4by$

B.  $(y - b)^2 = 4ac$

C.  $y^2 = 4b(x - a)$

D. none

**Answer: A**

 [Watch Video Solution](#)

85. A rod PQ of length  $2a$  slides with its ends on the axes the locus of the circumcentre of  $\triangle OPQ$  is

A.  $x^2 + y^2 = 2a^2$

B.  $x^2 + y^2 = 4a^2$

C.  $x^2 + y^2 = 3a^2$

D.  $x^2 + y^2 = a^2$

**Answer: D**

 [Watch Video Solution](#)

86. If  $O=(0,0)$ ,  $A=(1,0)$  and  $B = (1/2, \sqrt{3}/2)$  then the centre of the circle for which the lines OA, AB and BO are the tangents, is

A.  $\left(\frac{1}{2}, \frac{1}{2\sqrt{3}}\right)$

B.  $\left(\frac{1}{2}, \frac{1}{4}\right)$

C.  $\left(\frac{1}{2}, \frac{-1}{\sqrt{3}}\right)$

D.  $\left(\frac{1}{2}, \frac{\sqrt{3}}{4}\right)$

**Answer: A**



**Watch Video Solution**

87. If a chord of the circle  $x^2 + y^2 = 8$  makes equal intercepts of length  $a$  on the coordinate axes, then  $|a| <$

A. 2

B.  $\sqrt{2}$

C. 4

D.  $\sqrt{8}$

**Answer: C**



**Watch Video Solution**

88. The circle  $x^2 + y^2 - 4x + 4y - 1 = 0$  cuts the positive coordinate axes in A and B respectively. The equation to the diameter of the circle perpendicular to the chord AB is

A.  $5y + 20 = (90 + 4\sqrt{5})(x + 2)$

B.  $2y + 12 = (19 + 14\sqrt{5})(x - 2)$

C.  $10y + 121 = (9 + 4\sqrt{5})(x - 2)$

D.  $y + 2 = (9 + 4\sqrt{5})(x - 2)$

**Answer: D**



**Watch Video Solution**

89. The interval in which the value of  $\lambda$  should lie if the line  $3x - 4y = \lambda$  cuts the circle  $x^2 + y^2 - 4x - 8y = 5$  in real points is

A. (15,35)

B. (35,15)

C. (-35,15)

D. [-15,35]

**Answer: C**



**Watch Video Solution**

**90.** The line  $x+y=1$  cuts the coordinate axes at P and Q and a line perpendicular to it meet the axes R and S. The equation to the locus of the intersection of lines PS and QR is

A.  $x^2 + y^2 = 1$

B.  $x^2 + y^2 - 2x - 2y = 0$

C.  $x^2 + y^2 - x - y = 0$

D. none

**Answer: C**

[Watch Video Solution](#)

91. Let  $x^2 + y^2 + x(x-a) + y(y-1) = 0$  be a circle. If two chords from  $(a,1)$  bisected by X-axis are drawn to the circle then the condition is

A.  $a^2 = 8$

B.  $a^2 < 8$

C.  $a^2 > 8$

D. none

**Answer: C**

[Watch Video Solution](#)

92. If two distinct chords, drawn from the point  $(p,q)$  on the circle  $x^2 + y^2 - px - qy = 0$  (where  $pq \neq 0$ ) are bisected by the x-axis then

A.  $p^2 = q^2$

B.  $p^2 = 8q^2$

C.  $p^2 < 8q^2$

D.  $p^2 > 8q^2$

**Answer: D**



**Watch Video Solution**

93. The point of contact of the line  $3x-4y-25=0$  with the circle  $x^2 + y^2 = 25$  is

A. (1,-2)

B. (3,-4)

C. (1,3)

D. (-1,2)

**Answer: B**



**Watch Video Solution**

94. Show that  $x + y + 1 = 0$  touches the circle

$$x^2 + y^2 - 3x + 7y - 14 = 0 \text{ and find its}$$

point of contact.

A. (1,0)

B. (2,-3)

C. (5,2)

D. (-1,0)

**Answer: B**



[Watch Video Solution](#)

95. The point where the line  $4x - 3y + 7 = 0$  touches the circle

$$x^2 + y^2 - 6x + 4y - 12 = 0 \text{ is}$$

A. (1,1)



B. (1,-1)

C. (-1,1)

D. (-1,-1)

**Answer: C**



**Watch Video Solution**

96. If the line  $y = mx + a\sqrt{1 + m^2}$  touches the circle  $x^2 + y^2 = a^2$ , then the point of contact is

A.  $\left( -\frac{am}{\sqrt{1 + m^2}}, \frac{a}{\sqrt{1 + m^2}} \right)$

B.  $\left( \frac{am}{\sqrt{1 + m^2}}, \frac{a}{\sqrt{1 + m^2}} \right)$

C.  $\left( -\frac{am}{\sqrt{1 + m^2}}, \frac{a}{\sqrt{1 + m^2}} \right)$

D.  $\left( -\frac{m}{\sqrt{1 + m^2}}, \frac{a}{\sqrt{1 + m^2}} \right)$

**Answer: A**



**Watch Video Solution**

97. If the tangent to the circle  $x^2 + y^2 = 5$  at  $(1,-2)$  also touches the circle  $x^2 + y^2 - 8x + 6y + 20 = 0$  then the point of contact is

- A. (1,0)
- B. (3,-1)
- C. (5,2)
- D. (-1,0)

**Answer: B**



[Watch Video Solution](#)

98. The line  $y = x + a\sqrt{2}$  touches the circle  $x^2 + y^2 = a^2$  at P. The coordinate of P are

- A.  $(a, a)$
- B.  $(a/2, a/2)$

C.  $(a/\sqrt{2}, a/\sqrt{2})$

D.  $(-a/\sqrt{2}, a/\sqrt{2})$

**Answer: D**



**Watch Video Solution**

99. The length of the tangent from (6,8) to the circle  $x^2 + y^2 = 4$  is

A.  $\sqrt{6}$

B.  $2\sqrt{6}$

C.  $4\sqrt{6}$

D.  $5\sqrt{6}$

**Answer: C**



**Watch Video Solution**

100. Find the length of the tangent from

$(1, 3)$  to the circle  $x^2 + y^2 - 2x + 4y - 11 = 0$ .

A. 1

B. 2

C. 3

D. 4

**Answer: C**



[Watch Video Solution](#)

101. The length of the tangent from  $(0,0)$  to the circle

$2x^2 + 2y^2 + x - y + 5 = 0$  is

A.  $\sqrt{5}$

B.  $\sqrt{5}/2$

C.  $\sqrt{2}$

D.  $\sqrt{5/2}$

**Answer: D**



**Watch Video Solution**

**102.** The length of the tangent from to the circle

$x^2 + y^2 + 2gx + 2fy + c = 0$  to the circle

$x^2 + y^2 + 2gx + 2fy + c' = 0$  is

A.  $\sqrt{c - c'}$

B.  $\sqrt{c + c'}$

C.  $\sqrt{c' - c}$

D.  $c - c'$

**Answer: C**



**Watch Video Solution**

103. The length of the tangent from a point on the circle  $x^2 + y^2 + 4x - 6y - 12 = 0$  to the circle  $x^2 + y^2 + 4x - 6y + 4 = 0$  is

- A. 4
- B. 12
- C. 16
- D. 8

**Answer: A**



[Watch Video Solution](#)

104. The length of the tangent from the point  $(-1,1)$  to the circle  $x^2 + y^2 - 4x + k = 0$  equal to 2 then  $k =$

- A. 1
- B. 2
- C. -2

D. -5

**Answer: C**



[Watch Video Solution](#)

**105.** If the length of the tangent from  $(2,3)$  to circle  $x^2 + y^2 + 6x + 2ky - 6 = 0$  is equal to 7.

A. 2

B. 4

C. 5

D. 7

**Answer: C**



[Watch Video Solution](#)

106. If the length of the tangent from two points A,B to a circle are 6,7 respectively. If A,B are conjugate points then AB=

A. 5

B.  $\sqrt{85}$

C.  $\sqrt{85}/2$

D. none

**Answer: B**



[Watch Video Solution](#)

107. If the line  $y=x$  touches the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  at P where  $OP = 6\sqrt{2}$  then  $c=$

A. 36

B. 144

C. 72



D. 100

**Answer: C**



[Watch Video Solution](#)

**108.** A circle  $S=0$  with radius  $\sqrt{2}$  touches the line  $x+y-2=0$  at  $(1,1)$ . Then the length of the tangent drawn from the point  $(1,2)$  to  $S=0$  is

A. 1

B.  $\sqrt{2}$

C.  $\sqrt{3}$

D. 2

**Answer: C**



[Watch Video Solution](#)

109. If the length of the tangent from  $(h,k)$  to the circle  $x^2 + y^2 = 16$  is twice the length of the tangent from the same point to the circle  $x^2 + y^2 + 2x + 2y = 0$ , then

A.  $h^2 + k^2 + 4h + 4k + 16 = 0$

B.  $h^2 + k^2 + 3h + 3k = 0$

C.  $3h^2 + 3k^2 + 8h + 8k + 16 = 0$

D.  $3h^2 + 3k^2 + 4h + 4k + 16 = 0$

**Answer: C**



**Watch Video Solution**

110. If the length of the tangent from  $(1,2)$  to the circle  $x^2 + y^2 + x + y - 4 = 0$  and  $3x^2 + 3y^2 - x - y - \lambda = 0$  are in the ratio 4:3 then  $\lambda =$

A.  $23/4$

B.  $39/4$

C.  $17/4$

D.  $19/4$

**Answer: B**



**Watch Video Solution**

111. If the length of the tangents from any point on the circle  $15x^2 + 15y^2 - 48x + 64y = 0$  to the two circles  $5x^2 + 5y^2 - 24x + 32y + 75 = 0$ ,  $5x^2 + 5y^2 - 48x + 64y + 300 = 0$  are in the ratio

A. 1 : 2

B. 2 : 3

C. 3 : 4

D. none

**Answer: A**



[Watch Video Solution](#)

112. If the square of the length of the tangents from a point P to the circles  $x^2 + y^2 = a^2$ ,  $x^2 + y^2 = b^2$ ,  $x^2 + y^2 = c^2$  are in A.P. then  $a^2, b^2, c^2$  are in

A. A.P.

B. G.P.

C. H.P.

D. A.G.P.

**Answer: A**



[Watch Video Solution](#)

113. The area of the quadrilateral formed by the tangents from the point (4,5) to the circle  $x^2 + y^2 - 4x - 2y - 11 = 0$  with a pair of the radii joining the points of contact of these tangents is

- A. 4
- B. 6
- C. 8
- D. 10

**Answer: C**



[Watch Video Solution](#)

114. If OA and OB are the tangent from the origin to the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  and C is the centre of the circle then the area of the quadrilateral OCAB is

A.  $\sqrt{g^2 + f^2 - c}$

B.  $\sqrt{c(g^2 + f^2 - c)}$

C.  $\frac{\sqrt{g^2 + f^2 - c}}{c}$

D.  $\frac{\sqrt{g^2 + f^2 - c}}{2}$

**Answer: B**



**Watch Video Solution**

**115.** If the distances from the origin to the centres of three circles  $x^2 + y^2 - 2kix = c^2$ , ( $i = 1, 2, 3$ ) are in G.P, then the length of the tangents drawn to them from any point on the circle  $x^2 + y^2 = c^2$  are in

A. A.P.

B. G.P.

C. H.P.

D. none

**Answer: B**



[Watch Video Solution](#)

**116.** The equation to the circle which is such that the lengths of the tangents to it from the points  $(1,0)$ ,  $(2,0)$  and  $(3,2)$  are  $1, \sqrt{7}, \sqrt{2}$  respectively is

A.  $2x^2 + 2y^2 + 6x + 17y + 6 = 0$

B.  $2x^2 + 2y^2 + 6x - 17y - 6 = 0$

C.  $3x^2 + y^2 + 6x + 15y + 5 = 0$

D. none

**Answer: B**



[Watch Video Solution](#)

117. If the length of the tangent from  $(f,g)$  to the circle  $x^2 + y^2 = 6$  be twice the length of the tangent from the same point to the circle  $x^2 + y^2 + 3x + 3y = 0$ , then

A.  $f^2 + g^2 + 4f + 4g + 2 = 0$

B.  $f^2 - g^2 + 4f - 4g + 2 = 0$

C.  $f^2 - g^2 + 4g + 2 = 0$

D.  $f^2 + g^2 - 4f + 4g - 2 = 0$

**Answer: A**



**Watch Video Solution**

118. The locus of the point the lengths of the tangents from which to the circles  $x^2 + y^2 - 2x - 4y - 4 = 0$ ,  $x^2 + y^2 - 10x + 25 = 0$  are in the ratio 2:1 is

A.  $3x^2 + 3y^2 + 38x + 20y + 104 = 0$



B.  $3x^2 + 3y^2 - 38x + 20y + 104 = 0$

C.  $3x^2 + 3y^2 - 38x - 20y - 104 = 0$

D.  $3x^2 + 3y^2 + 38x + 20y + 140 = 0$

**Answer: B**



[Watch Video Solution](#)

**119.** The locus of the point, the lengths of the tangents from which to the circles  $x^2 + y^2 - 4 = 0$ ,  $x^2 + y^2 - 2x - 4 = 0$  are equal is

A.  $x=-1$

B.  $x=3$

C.  $x=0$

D.  $x=1$

**Answer: C**



[Watch Video Solution](#)

120. The locus of the points from which the lengths of the tangents to the two circles  $x^2 + y^2 + 4x + 3 = 0$ ,  $x^2 + y^2 - 6x + 5 = 0$  are in the ratio 2:3 is a circle with centre

A. (6,0)

B. (-6,0)

C. (0,6)

D. (0,-6)

**Answer: B**



[Watch Video Solution](#)

121. The locus of the point which is such that the lengths of the tangents from it to the circles  $x^2 + y^2 = a^2$  and  $x^2 + y^2 = b^2$  are inversely as their radii is

A.  $x^2 + y^2 = a^2 - b^2$

B.  $x^2 + y^2 = a^2b^2$

C.  $x^2 + y^2 = a^2 + b^2$

D.  $x^2 + y^2 = a + b$

**Answer: C**



**Watch Video Solution**

**122.** The length of the intercept made by the circle

$x^2 + y^2 - 12x + 14y + 11 = 0$  on x-axis is

A. 9

B. 10

C. 8

D. 6

**Answer: B**

 [Watch Video Solution](#)

123. The length of the intercept made by the circle  $x^2 + y^2 + 10x - 12y - 13 = 0$  on y-axis is

- A. 1
- B. 2
- C. 4
- D. 14

**Answer: D**

 [Watch Video Solution](#)

124. The intercept made by the circle  $x^2 + y^2 - 2hx \sin \theta - 2ky \sin \theta - h^2 \cos^2 \theta = 0$  on the x-axis is

- A. 4h

B. 3h

C. 2h

D. h

**Answer: C**



**Watch Video Solution**

**125.** The extremities of a diameter of a circle have coordinate  $(-4,-3)$  and  $(12,-1)$ . The length of the segment cut off by the circle on  $y$ -axis is

A.  $5\sqrt{13}$

B. 14

C.  $3\sqrt{13}$

D.  $\sqrt{55}$

**Answer: B**



**Watch Video Solution**

126. The length of the chord  $x+2y=5$  of the circle  $x^2 + y^2 = 9$  is

A. 4

B. 8

C. 2

D. 1

**Answer: A**



[Watch Video Solution](#)

127. The length of the chord  $x=3y+13$  cut off by the circle

$x^2 + y^2 - 4x + 4y + 3 = 0$  is

A.  $2\sqrt{5}$

B.  $5\sqrt{2}$

C.  $\sqrt{20}$

D.  $\sqrt{10}$

**Answer: D**



**Watch Video Solution**

**128.** The equation of the circle with centre (3,-1) and which cuts off a chord of length 6 on the line  $2x-5y+18=0$  is

A.  $x^2 + y^2 - 6x + 2y - 28 = 0$

B.  $x^2 + y^2 - 6x + 8 = 0$

C.  $x^2 + y^2 + 4x - 16x + 2y - 18 = 0$

D.  $3x^2 + 3y^2 + 4x - 6y + 18 = 0$

**Answer: A**



**Watch Video Solution**

**129.** The locus of centre of a circle which passes through the origin and cuts off a length of 4 units from the line  $x=3$  is

A.  $y^2 + 6x = 0$

B.  $y^2 + 6x = 13$

C.  $y^2 + 6x = 10$

D.  $x^2 + 6y = 13$

**Answer: B**



[Watch Video Solution](#)

**130.** The equation of the circle which is touched by  $y=x$ , has its centre on the positive direction of the  $x$ -axis and cuts off a chord of length 2 unit along the line  $\sqrt{3}y - x = 0$

A.  $x^2 + y^2 - 4x + 2 = 0$

B.  $x^2 + y^2 - 4x + 1 = 0$



$$C. x^2 + y^2 - 8x + 8 = 0$$

$$D. x^2 + y^2 - 4y + 2 = 0$$

**Answer: A**



**Watch Video Solution**

**131.** The locus of the foot of the perpendicular drawn from the origin to any chord of the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  which subtends a right angle at the origin is

$$A. x^2 + y^2 + gx + fy + c/2 = 0$$

$$B. 2(x^2 + y^2) + gx + fy + c = 0$$

$$C. 2(x^2 + y^2 + gx + fy) + 3c = 0$$

$$D. x^2 + y^2 + 2(gx + fy + c) = 0$$

**Answer: A**



**Watch Video Solution**

132. The locus of the centre of a circle which passes through the point  $(h,k)$  and cuts of a chord of length  $2d$  on the line  $lx+my+n=0$  is

A.  $(lx + my + n)^2 = (l^2 + m^2) [(x - h)^2 + (y - k)^2 - d^2]$

B.  $(lx + my + n)^2 = (m^2 + n^2) [(y - h)^2 + (x - k)^2 - d^2]$

C.  $(lx + my + n)^2 = (l^2 + m^2) [(x + h)^2 + (y + k)^2 - 2d^2]$

D.  $(lx + my + n)^2 = (l^3 + m^3) [(2x - 2h)^2 + (2y - 10k)^2 - dd^2]$

**Answer: A**



[Watch Video Solution](#)

133. The circles  $x^2 + y^2 = 4x + 8y + 5$  intersects the line  $3x-4y = m$  at two distinct points of

A.  $-85 < m < -35$

B.  $-35 < m < 15$

C.  $15 < m < 65$

D.  $35 < m < 85$

**Answer: B**



[Watch Video Solution](#)

**134.** If the line passing through  $P=(8,3)$  meets the circle  $S \equiv x^2 + y^2 - 8x - 10y + 26 = 0$  at A,B then PA.PB=

A. 5

B. 14

C. 4

D. 24

**Answer: A**



[Watch Video Solution](#)

135. If the tangent at P on the circle  $x^2 + y^2 = a^2$  cuts two parallel tangents of the circle at A and B then PA.PB=

A. a

B.  $a^2$

C. 2a

D.  $2a^2$

**Answer: B**



[Watch Video Solution](#)

136. The lines  $2x+3y+19=0$  and  $9x+6y-17=0$  cuts the coordinate axes in

A. concyclic-points

B. conjugate points

C. same points

D. none

**Answer: A**



[Watch Video Solution](#)

**137.** If a circle passes through the points of intersection of the axes with the lines  $ax-y+1=0$  and  $x-2y+3=0$  then  $a=$

A. 2

B. 3

C. 1

D. none

**Answer: A**



[Watch Video Solution](#)

**138.** If the line  $2x+3y+1=0$ ,  $3x+2y-1=0$  intersect the coordinate axes in four concyclic points then the equation of the circle passing through these

four points is

A.  $x^2 + y^2 + x - y - 1 = 0$

B.  $6(x^2 + y^2) + x - y - 1 = 0$

C.  $x^2 + y^2 + 6(x - y) - 1 = 0$

D.  $6x^2 + 6y^2 + 6x - 6y - 1 = 0$

**Answer: B**



**Watch Video Solution**

**139.** If the lines  $2x-y+11=0$ ,  $x-2y+3=0$  intersect the coordinate axes in four concyclic points the centre of the circle passing through these four points is

A.  $(17/4, 25/4)$

B.  $(-17/4, 25/4)$

C.  $(17/4, -25/4)$

D.  $(-17/4, -25/4)$

**Answer: B**



[Watch Video Solution](#)

**140.** The number of tangents that can be drawn from  $(6,0)$  to the circle

$$x^2 + y^2 - 4x - 6y - 12 = 0 \text{ are}$$

A. 4

B. 3

C. 1

D. 2

**Answer: C**



[Watch Video Solution](#)

141. The equation of the chord of contact of the point (4,2) with respect to the circle  $x^2 + y^2 - 5x + 4y - 3 = 0$  is

A.  $5x - 3y - 25 = 0$

B.  $8x - 2y - 11 = 0$

C.  $3x + 8y - 18 = 0$

D.  $x - 14y - 6 = 0$

**Answer: C**



[Watch Video Solution](#)

142. The length of the chord of contact of (-2,3) with respect to the circle  $x^2 + y^2 - 2x + 4y + 1 = 0$  is

A.  $15\sqrt{13/3}$

B.  $5\sqrt{3/13}$

C.  $4\sqrt{15/17}$



D.  $15\sqrt{3/13}$

**Answer: C**



**Watch Video Solution**

### Exercise 1C(Pole, Polar)

1. The polar of the point (3,4) w.r.t.  $x^2 + y^2 = 25$  is

A.  $x+2y-7=0$

B.  $3x+4y-25=0$

C.  $5x-8y+12=0$

D.  $x-4=0$

**Answer: B**



**Watch Video Solution**

2. The polar of the point  $(-2,3)$  w.r.t.  $x^2 + y^2 - 4x - 6y + 5 = 0$  is

A.  $x=0$

B.  $y=0$

C.  $x=1$

D.  $y=1$

**Answer: A**



[Watch Video Solution](#)

3. The polar of the point  $(1,2)$  w.r.t. the circle

$x^2 + y^2 - 14y + 6 = 0$ ,  $x^2 + y^2 - 4x + 6y + 4 = 0$  are

A. coincide

B. parallel

C. perpendicular

D. none

**Answer: A**



**Watch Video Solution**

4. The polar of the point  $(1, -2)$  w.r.t. the circle

$$x^2 + y^2 + 6y + 5 = 0, x^2 + y^2 + 2x + 8y + 5 = 0 \text{ are}$$

- A. parallel
- B. coincident
- C. perpendicular
- D. none

**Answer: B**



**Watch Video Solution**

5. The polar of the given point w.r.t. the circle  $x^2 + y^2 - 2\lambda x + c = 0$

where  $\lambda$  is a parameter, passes through

- A. a fixed point
- B. the origin
- C. a point on x-axis
- D. a point on y-axis

**Answer: A**

 [Watch Video Solution](#)

6. The polar of the point (4,1) w.r.t. the circle  $x^2 + y^2 - 2x - 2y - 7 = 0$
- A. touches the circle
  - B. intersect the circle at two points
  - C. does not meet the circle
  - D. none

**Answer: A**

 [Watch Video Solution](#)

7. The polar of the point (1,2) w.r.t. the circle  $x^2 + y^2 - 2x - 4y - 4 = 0$

- A. touches the circle
- B. intersect the circle at two points
- C. does not meet the circle
- D. none

**Answer: C**



[Watch Video Solution](#)

8. The polar of the point  $(2t, t-4)$  w.r.t. the circle

$x^2 + y^2 - 4x - 6y + 1 = 0$  passes through the point

- A. (1,2)
- B. (1,3)
- C. (2,1)

D. (3,1)

**Answer: D**



[Watch Video Solution](#)

9. The polar of the point  $(t-1, 2t)$  w.r.t. the circle  $x^2 + y^2 - 4x + 6y + 4 = 0$  passes through the point of intersection of the lines

A.  $x-y-2=0, x+2y+4=0$

B.  $3x+3y+2=0, x+2y+4=0$

C.  $x-y-2=0, x+2y-4=0$

D.  $-3x + 3y + 2 = 0, x - 2y + 4 = 0$

**Answer: A**



[Watch Video Solution](#)

10. The polar of the point  $(x_1, y_1)$  w.r.t. the circle  $x^2 + y^2 = a^2$  meets the coordinate axes in A and B. The area of  $\triangle OAB$  is

A.  $\frac{a^2}{|x_1 y_1|}$

B.  $\frac{a^2}{2|x_1 y_1|}$

C.  $\frac{a^3}{|x_1 y_1|}$

D.  $\frac{a^4}{2|x_1 y_1|}$

**Answer: D**



[Watch Video Solution](#)

11. The polar of the line  $8x-2y=11$  with respect to the circle  $2x^2 + 2y^2 = 11$  is

A. (4,1)

B. (4,-1)

C. (3,1)

D. (4,2)

**Answer: B**



[Watch Video Solution](#)

12. The pole of  $3x + 4y - 45 = 0$  w.r.t. circle  $x^2 + y^2 - 6x - 8y + 5 = 0$  is

A. (6,8)

B. (3,4)

C. (3/5,4/5)

D. (-6,8)

**Answer: A**



[View Text Solution](#)



13. The polar of a point P w.r.t. a circle of radius  $a$  touching both  $x$  and  $y$  axis and lying in the first quadrant is  $x+2y=4a$ . The coordinate of P are

A.  $(a,2a)$

B.  $(2a,a)$

C.  $(-a,4a)$

D.  $(2a,3a)$

**Answer: D**



[Watch Video Solution](#)

14. If O is the origin and OP, OQ are the tangents to the circle  $x^2 + y^2 + 2x + 4y + 1 = 0$ , the pole of the line PQ is

A.  $(-1,-2)$

B.  $(0,0)$

C.  $(-2,-1)$

D.  $(-1/2, -1)$

**Answer: B**



[Watch Video Solution](#)

15. The polars of two points  $A(1,3)$ ,  $B(2,-1)$  w.r.t to circle  $x^2 + y^2 = 9$  intersect at  $C$  then polar of  $C$  w.r.t to the circle is

A.  $x+3y=9$

B.  $2x-y=9$

C.  $4x+y-7=0$

D.  $x-4y+7=0$

**Answer: C**



[Watch Video Solution](#)

16. Each side of  $\Delta ABC$  is the polar of the opposite vertex with respect to a circle with centre P. For the  $\Delta ABC$  the point P is

- A. centroid
- B. circumcentre
- C. incentre
- D. orthocentre

**Answer: D**



[Watch Video Solution](#)

17. The polar of the line  $ax + by + 3a^2 + 3b^2 = 0$  w.r.t. to the circle  $x^2 + y^2 + 2ax + 2by - a^2 - b^2 = 0$  is

- A. (2a,2b)
- B. (-2a,-2b)
- C. (-2a,2b)

D.  $(2a, -2b)$

**Answer: B**



**Watch Video Solution**

**18.** The polar of a given point which respect to any one of the circles  $x^2 + y^2 - 2kx + c^2 = 0$ , ( $k$  is a variable) always passes through a fixed point whatever to be the value of  $k$  is

A.  $\left( x_1, \frac{x_1^2 - c^2}{y_1} \right)$

B.  $\left( -x_1, \frac{x_1^2 - c^2}{y_1} \right)$

C.  $\left( x_1, -\frac{x_1^2 - c^2}{y_1} \right)$

D.  $\left( +x_1, \frac{x_1^2 - c^2}{y_1} \right)$

**Answer: B**



**Watch Video Solution**

19. If  $(1, a)$ ,  $(b, 2)$  are conjugate points with respect to the circle  $x^2 + y^2 = 25$ , then  $4a+2b=$

A. 25

B. 50

C. 100

D. 150

**Answer: B**



[Watch Video Solution](#)

20. If the points  $(k,1)$   $(2,-3)$  are conjugate w.r.t.  $x^2 + y^2 + 4x - 6y - 12 = 0$  then k

A.  $-3$

B.  $2/3$

C.  $5/4$

D. 1

**Answer: C**



**Watch Video Solution**

21. The point  $(4,-2)$ ,  $(3,b)$  are conjugate w.r.t. the circle  $x^2 + y^2 = 24$  if  $b =$

A. 6

B.  $-6$

C. 12

D.  $-4$

**Answer: B**



**Watch Video Solution**

22. If  $(4,2)$  and  $(k,-3)$  are conjugate points with respect to  $x^2 + y^2 - 5x + 8y + 6 = 0$  then  $k =$

A.  $\frac{28}{3}$

B.  $-\frac{28}{3}$

C.  $\frac{3}{28}$

D.  $-\frac{3}{28}$

**Answer: A**



[Watch Video Solution](#)

23. For the circle  $x^2 + y^2 - 2x - 4y - 4 = 0$ , then lines  $2x+3y-1=0$ ,  $2x+y+5=0$  are

A. perpendicular tangents

B. conjugate

C. parallel tangents

D. none

**Answer: B**

 [Watch Video Solution](#)

24. For the circle  $x^2 + y^2 - 6x - 6y + 5 = 0$  the lines  $3x + y - 2 = 0$ ,  $x + 7y - 11 = 0$  are

- A. conjugate
- B. perpendicular tangents
- C. parallel tangents
- D. none

**Answer: A**

 [Watch Video Solution](#)



25. The condition for the lines  $lx+my+n=0$  and  $m_1x + m_1y + n_1 = 0$  to be conjugate with respect to the circle  $x^2 + y^2 = r^2$  is

A.  $r^2(lm_1 - mm_1) = n_1$

B.  $r^2(lm_1 - mm_1) + n_1 = 0$

C.  $r^2(lm_1 - mm_1) = n_1n$

D.  $r^2(lm_1 - mm_1) = n_1$

Answer: D



View Text Solution

26. If the lines  $x+2y+K=0$ ,  $x+y-3=0$  are conjugate w.r.t.  $x^2 + y^2 = 9$ , then  $k =$

A. 3

B. -9

C. -3

D.  $-5$

**Answer: B**



[Watch Video Solution](#)

27. If the lines  $x+2y+k=0$ ,  $x+y-3=0$  are conjugate w.r.t. the circle  $x^2 + y^2 - 4x + 3y - 1 = 0$  then  $k=$

A. 4

B.  $-9$

C.  $-3$

D.  $-5$

**Answer: A**



[View Text Solution](#)

28. If the lines  $kx+2y-4=0$  and  $5x-2y-4=0$  are conjugate with respect to the circle  $x^2 + y^2 - 2x - 2y + 1 = 0$  then  $k=$

- A. 0
- B. 1
- C. 2
- D. 3

**Answer: B**



[Watch Video Solution](#)

29. The polar of three points with respect to a given circle are concurrent, then the three points

- A. are the vertices of an equilateral triangle
- B. are collinear
- C. are coincident

D. none

**Answer: B**



[View Text Solution](#)

30. The conjugate line  $3x+4y-45=0$  with respect to  $x^2 + y^2 - 6x - 8y + 5 = 0$  which is perpendicular to  $x+y=0$  is

A.  $x-y=8$

B.  $x-y=2$

C.  $x-y+2=0$

D.  $x-y+8=0$

**Answer: C**



[Watch Video Solution](#)

31. The straight line  $x-2y+1=0$  intersects the circle  $x^2 + y^2 = 25$  in points P and Q the coordinates of the point of intersection of tangents drawn at P and Q to the circle is

- A. (25,50)
- B. (-25,50)
- C. (25,-50)
- D. (-25,-50)

**Answer: B**



[Watch Video Solution](#)

32. The line  $4x+4y-11=0$  intersects the circle  $x^2 + y^2 - 6x - 4y + 4 = 0$  at A and B. The point of intersection of the tangents at A,B is

- A. (-1,-2)
- B. (1,2)

C. (-1,2)

D. (1,-2)

**Answer: A**



[Watch Video Solution](#)

**33.** The point of intersection of the tangents to the circle passing through (4, 7), (5,6) (1,5) at the points where it is cut by the line  $5x+y+17=0$

A. (-4,2)

B. (4,2)

C. (6,4)

D. (8,4)

**Answer: A**



[View Text Solution](#)

34. Let A and B be two fixed points. If a perpendicular p is drawn from A to the polar of B with respect to the circle  $x^2 + y^2 = a^2$  and perpendicular q is drawn from B to the polar of A then

A.  $p=q$

B.  $pOA=qOB$

C.  $pOB=qOA$

D.  $p^2 = q^2$

**Answer: C**



[View Text Solution](#)

35. The lengths of the tangents from the points A and B to the circle are  $l_1$  and  $l_2$  respectively. If A and B are conjugate points, then  $AB^2 =$

A.  $l_1^2 - l_2^2$

B.  $l_1^2 + l_2^2$

C.  $l_1^2 + l_2^2$

D.  $l_1^2 l_2^2$

**Answer: B**



[Watch Video Solution](#)

**36.** The polars of any two points A and B wrt a circle, centre O meet at P.

Then  $AP^2 - BP^2 =$

A.  $AO^2 + BO^2$

B.  $OA^2 - OB^2$

C. OA.OB

D. none

**Answer: B**



[View Text Solution](#)



37. If polar of P w.r.t.  $S=0$  touch the circle  $x^2 + y^2 = a^2$ , the locus of P is

A.  $a^2[(x + g)^2 + (y + f)^2] = c^2$

B.  $(gx + fy + c)^2 = a^2[(x + g)^2 + (y + f)^2]$

C.  $(gx + fy + c)^2 = a^2$

D.  $(gx + fy + c)^2 = a^2(x^2 + y^2)$

**Answer: B**



[View Text Solution](#)

38. The locus of poles of tangents to the circle  $x^2 + y^2 = a^2$  w.r.t the circle  $x^2 + y^2 + 2ax - a^2 = 0$  is

A.  $y^2 = 4ac$

B.  $y^2 = 2ax$

C.  $y^2 + 2ax = 0$

D.  $y^2 + 4ax = 0$

**Answer: D**



**Watch Video Solution**

**39.** The locus of poles of tangents to the circle  $(x - p)^2 + y^2 = b^2$  w.r.t. the circle  $x^2 + y^2 = a^2$  is

A.  $(a^2 - px)^2 = b^2(x^2 + y^2)$

B.  $(a^2 - bx)^2 = p^2(x^2 + y^2)$

C.  $(a^2 - px)^2 = b^2(x^2 + y^2)$

D.  $(a^2 - bx)^2 = p^2(x^2 + y^2)$

**Answer: A**



**Watch Video Solution**

**40.** If the polars of points on the circle  $x^2 + y^2 = a^2$  w.r.t. the circle  $x^2 + y^2 = b^2$  touch the circle  $x^2 + y^2 = c^2$  then a, b, c are in

A. A.P.

B. G.P.

C. H.P.

D. A.G.P.

**Answer: B**



**Watch Video Solution**

**41.** Polar of the origin w.r.t. the circle  $x^2 + y^2 + 2ax + 2by + c = 0$  touches the circle  $x^2 + y^2 = r^2$  if

A.  $c = r(a^2 + b^2)$

B.  $r = c(a^2 + b^2)$

C.  $c^2 = r^2(a^2 + b^2)$

D.  $r^2 = c^2(a^2 + b^2)$

**Answer: C**

 [Watch Video Solution](#)

42. A tangent at a point on the circle  $x^2 + y^2 = a^2$  intersects a concentric circle  $S$  at  $P$  and  $Q$ . The tangents to  $S$  at  $P$  and  $Q$  meet on the circle  $x^2 + y^2 = b^2$ . The equation to the circle  $S$  in

A.  $x^2 + y^2 = a$

B.  $x^2 + y^2 = b$

C.  $x^2 + y^2 = ab$

D.  $x^2 + y^2 = a^2 + b^2$

**Answer: C**

 [Watch Video Solution](#)

43. The pole of a straight line with respect to the circle  $x^2 + y^2 = a^2$  lies on the circle  $x^2 + y^2 = 9a^2$ . If the straight line touches the circle  $x^2 + y^2 = r^2$ , then

A.  $9a^2 = r^2$

B.  $9r^2 = a^2$

C.  $r^2 = a^2$

D. none

**Answer: B**



**Watch Video Solution**

**44.** The locus of the point, the chord of contact of which wrt the circle

$x^2 + y^2 = a^2$  subtends a right angle at the centre of the circle is

A.  $x^2 + y^2 = \frac{a^2}{2}$

B.  $x^2 + y^2 = \frac{a^2}{3}$

C.  $x^2 + y^2 = 2a^2$

D.  $x^2 + y^2 = 3a^2$

**Answer: C**

 [Watch Video Solution](#)

45. The locus of the point, whose chord of contact w.r.t the circle  $x^2 + y^2 = a^2$  makes an angle  $2\alpha$  at the centre of the circle is

A.  $x^2 + y^2 = 2a^2$

B.  $x^2 + y^2 = 2a^2 \cos^2 \alpha$

C.  $x^2 + y^2 = a^2 \sec^2 \alpha$

D.  $x^2 + y^2 = a^2 \tan^2 \alpha$

**Answer: C**

 [Watch Video Solution](#)

46. The condition that the chord of contact of the point  $(b,c)$  w.r.t. to the circle  $x^2 + y^2 = a^2$  should subtend a right angled at the centre is

A.  $b^2 + c^2 = a^2$

B.  $b^2 + c^2 = 2a^2$

C.  $b^2 + c^2 = 3a^2$

D.  $2b^2 + 2c^2 = a^2$

**Answer: B**



**Watch Video Solution**

47. If the pole of the line with respect to the circle  $x^2 + y^2 = c^2$  lies on the circle  $x^2 + y^2 = 9c^2$  then the line is a tangent to the circle with centre origin is

A.  $9x^2 + 9y^2 = c^2$

B.  $9x^2 + 9y^2 = c$

C.  $8x^2 + 8y^2 = c^2$

D.  $8x^2 + 8y^2 = c$

**Answer: A**



Watch Video Solution

48. A point P is taken on the circle  $x^2 + y^2 = a^2$  and PN, PM are drawn, perpendicular to the axes. The locus of the pole of the line MN is

A.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{a^2}$

B.  $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{a}$

C.  $\frac{1}{x^2} - \frac{1}{y^2} = \frac{1}{a}$

D.  $\frac{1}{x^2} - \frac{1}{y^2} = \frac{1}{a^2}$

Answer: A



Watch Video Solution

49. If the pole of a line w.r.t to the circle  $x^2 + y^2 = a^2$  lies on the circle  $x^2 + y^2 = a^4$  then the line touches the circle

A.  $x^2 + y^2 = 2$



B.  $x^2 + y^2 = 1$

C.  $x^2 + y^2 = 3$

D. none

**Answer: B**



**Watch Video Solution**

**50.** The area of the triangle formed by the tangents from (1,3) to the circle

$x^2 + y^2 - 4x + 6y + 1 = 0$  and its chord of contact is

A.  $\frac{250\sqrt{3}}{37}$

B.  $\frac{125\sqrt{3}}{7}$

C.  $\sqrt{250\sqrt{3}}$

D.  $\frac{125\sqrt{3}}{7}$

**Answer: A**



**Watch Video Solution**

51. The locus of the poles of the line  $ax + by + c = 0$  w.r.t a system of circles  $x^2 + y^2 = \lambda$  where  $\lambda$  is parameter is

A.  $ax + by = \lambda$

B.  $bx + ay = \lambda$

C.  $ax - by = 0$

D.  $bx - ay = 0$

**Answer: D**



[Watch Video Solution](#)

52. The locus of the poles of the line  $2x+3y-4=0$  w.r.t. the circle  $x^2 + y^2 + 2\lambda x - 16 = 0$  is

A.  $13x^2 - 22xy - 14y + 48 = 0$

B.  $x^2 - 32xy - 14y + 88 = 0$

C.  $3x^2 - 2xy - 4y + 48 = 0$

D.  $3x^2 - 2xy - 4y - 48 = 0$

**Answer: C**



[View Text Solution](#)

53. The inverse point of (1,-1) with respect to the circle  $x^2 + y^2 = 4$ , is

A. (-1,1)

B. (-2,2)

C. (1,-1)

D. (2,-2)

**Answer: D**



[Watch Video Solution](#)

54. The inverse point of origin w.r.t. the circle

$$x^2 + y^2 + 2gx + 2fy + c = 0 \text{ is}$$

- A.  $\left( \frac{cg}{g^2 + f^2}, \frac{cf}{g^2 + f^2} \right)$
- B.  $\left( \frac{-cf}{g^2 - f^2}, \frac{-cg}{g^2 - f^2} \right)$
- C.  $\left( \frac{-cg}{2g^2 + 2f^2}, \frac{-cf}{2g^2 + 2f^2} \right)$
- D.  $\left( \frac{-cg}{g^2 + f^2}, \frac{-cf}{g^2 + f^2} \right)$

**Answer: D**



[View Text Solution](#)

55. The inverse point of (1,2) origin w.r.t. the circle

$$x^2 + y^2 - 4x - 6y + 9 = 0 \text{ is}$$

- A. (0,0)
- B. (1,0)
- C. (0,1)

D. (1,1)

**Answer: C**



[Watch Video Solution](#)

56. The inverse point of (1,2) w.r.t. the circle  $x^2 + y^2 = 25$ , is (5,k) then k=

A. 10

B. 12

C. 22

D. 40

**Answer: A**



[Watch Video Solution](#)

57. The inverse point of  $(x_1, y_1)$  w.r.t. the circle  $x^2 + y^2 = a^2$  is  $(k(x_1), k(y_1))$ , then  $k =$

A.  $\frac{a^2}{x_1^2 - y_1^2}$

B.  $\frac{a^2}{x_1^2 + y_1^2}$

C.  $\frac{x^2}{x_1^2 + y_1^2}$

D.  $\frac{y^2}{x_1^2 + y_1^2}$

**Answer: B**



[Watch Video Solution](#)

58. For the circle  $x^2 + y^2 - 6x + 8y - 1 = 0$ , points  $(2,3), (-2,-1)$  are

A. conjugate points

B. end points of a diameter

C. inverse points

D. none

**Answer: A**



[View Text Solution](#)

**59.** For the circle  $x^2 + y^2 - 3x - 5y + 1 = 0$ , the points  $(4,2), (3,-5)$  are

- A. conjugate points
- B. end points of a diameter
- C. inverse points
- D. none

**Answer: B**



[View Text Solution](#)

**60.** For the circle  $x^2 + y^2 - 2x + 2y + 1 = 0$ , the points  $(-6,1), (2,3), (14/15, -11/15)$  are

- A. collinear
- B. lie on a diameter
- C. pair wise conjugate
- D. none

**Answer: C**

 [View Text Solution](#)

**61.** The equation of the chord of the circle  $x^2 + y^2 = 25$  with  $(1,-1)$  as the mid point is

- A.  $x+y=2$
- B.  $x+y+2=0$
- C.  $x-y=2$
- D.  $2x-y=0$

**Answer: C**



 [Watch Video Solution](#)

62. The equation of the chord of the circle  $x^2 + y^2 - 4x + 6y - 3 = 0$  having  $(1, -2)$  as its midpoint is

A.  $2x - 3y - 13 = 0$

B.  $x - y - 3 = 0$

C.  $x + 2y - 5 = 0$

D.  $2x + 3y + 13 = 0$

**Answer: B**

 [Watch Video Solution](#)

63. Given that for the circle  $x^2 + y^2 - 4x + 6y + 1 = 0$  the line with equation  $3x - y = 1$  is a chord. The midpoint of the chord is

A.  $(\frac{2}{5}, \frac{11}{5})$

B.  $(-2/5, 11/5)$

C.  $(-2/5, -11/5)$

D.  $(2/5, -11/5)$

**Answer: C**



**Watch Video Solution**

**64.** The length and the midpoint of the chord  $4x-3y+5=0$  w.r.t. the circle

$$x^2 + y^2 - 2x + 4y - 20 = 0 \text{ is}$$

A. 8,  $\left(-\frac{7}{5}, -\frac{1}{5}\right)$

B. 18,  $\left(\frac{7}{5}, \frac{1}{5}\right)$

C. 10,  $\left(-\frac{17}{5}, -\frac{11}{5}\right)$

D. 28,  $\left(-\frac{7}{5}, -\frac{8}{5}\right)$

**Answer: A**



**Watch Video Solution**

65. The length and the midpoint of the chord  $2x+y-5=0$  w.r.t. the circle

$$x^2 + y^2 = 9 \text{ is}$$

A. 2,(5,2)

B. 4 ,(2,1)

C. 10,(8,4)

D. 11,(13,11)

**Answer: B**



[View Text Solution](#)

66. If the tangent at  $(3,-4)$  to the circle  $x^2 + y^2 - 4x + 2y - 5 = 0$  cuts

the circle  $x^2 + y^2 + 16x + 2y + 10 = 0$  in A and B then the midpoint of

AB is

A. (-6,-7)

B. (2,-1)

C. (2,1)

D. (5,4)

**Answer: A**



**Watch Video Solution**

67. The midpoint of the chord formed by the polar of (-9,12) w.r.t.  $x^2 + y^2 = 100$  is

A.  $\left(4, \frac{-4}{3}\right)$

B.  $\left(-4, \frac{16}{3}\right)$

C.  $\left(-4, \frac{16}{9}\right)$

D.  $\left(4, \frac{16}{3}\right)$

**Answer: B**



**Watch Video Solution**

68. The locus of midpoints of chords of the circle  $x^2 + y^2 - 2px = 0$  passing through the origin is

A.  $x^2 + y^2 + 2px = 0$

B.  $x^2 + y^2 - px = 0$

C.  $x^2 + y^2 + px = 0$

D.  $x^2 + y^2 - 4px = 0$

**Answer: B**



**Watch Video Solution**

69. The locus of midpoints of the chord of the circle  $x^2 + y^2 = 25$  which pass through a fixed point (4,6) is a circle. The radius of that circle is

A.  $\sqrt{52}$

B.  $\sqrt{2}$

C.  $\sqrt{13}$

D.  $\sqrt{10}$

**Answer: C**

 [Watch Video Solution](#)

**70.** From the origin chords are drawn to the circle  $x^2 + y^2 - 2y = 0$ . The locus of the middle points of these chords is

A.  $x^2 + y^2 - y = 0$

B.  $x^2 + y^2 - x = 0$

C.  $x^2 + y^2 - 2x = 0$

D.  $x^2 + y^2 - x - y = 0$

**Answer: A**

 [Watch Video Solution](#)

71. Let  $C$  be the circle with centre  $(0,0)$  and radius 3 units. The equation of the locus of the midpoint of the chords of the circle  $C$  that subtend an angle of  $2\pi/3$  at its centre is

A.  $x^2 + y^2 = 27/4$

B.  $x^2 + y^2 = 9/4$

C.  $x^2 + y^2 = 3/2$

D.  $x^2 + y^2 = 1$

**Answer: B**



[Watch Video Solution](#)

72. The equation of the straight line meeting the circle  $x^2 + y^2 - 15 = 0$  and which is at the same distance from the centre is

A.  $x - 3y + 25 = 0$

B.  $x - 3y - 25 = 0$

C.  $x-3y+15=0$

D.  $x-3y+5=0$

**Answer: A**



[View Text Solution](#)

73. The equation of the straight line meeting the circle  $x^2 + y^2 = a^2$  in two points equal distance  $d$  from a point  $(x_1, y_1)$  on the circumference is  $xy_1 + yy_1 =$

A.  $a^2 - ad^2$

B.  $a^2 + \frac{1}{2}d^2$

C.  $a^2 - \frac{1}{2}d^2$

D. 0

**Answer: C**



[Watch Video Solution](#)



74. If OA, OB are two equal chords of the circle  $x^2 + y^2 - 2x + 4y = 0$  perpendicular to each other and passing through the origin, then the equations of OA and OB are

A.  $3x+y=0, x+3y=0$

B.  $3x-y=0, x-3y=0$

C.  $3x-y=0, x+3y=0$

D.  $3x+y=0, x-3y=0$

**Answer: C**



[View Text Solution](#)

75. Let AB be the chord  $4x-3y+5=0$  with respect to the circle  $x^2 + y^2 - 2x + 4y - 20 = 0$  If C=(7,1) then the area of the triangle ABC is

A. 15 sq. unit

B. 20 sq. unit

C. 24 sq. unit

D. 45 sq. unit

**Answer: C**



**Watch Video Solution**

**76.** From the point  $A(0,3)$  on the circle  $x^2 + 4x + (y - 3)^2 = 0$ , a chord  $AB$  is drawn and extended to a point  $P$ , such that  $AP=2AB$ . The locus of  $P$  is

A.  $x^2 + 4x + (y - 3)^2 = 0$

B.  $x^2 + 8x + (y - 3)^2 = 0$

C.  $x^2 + 4x + (y - 3)^2 = 0$

D.  $x^2 + 8x - (y - 3)^2 = 0$

**Answer: B**



**Watch Video Solution**

77. The equation to the locus of the midpoints of chords of the circle

$x^2 + y^2 - 8x + 6y + 20 = 0$  which are parallel to  $3x+4y+5=0$  is

A.  $4x+13y+125=0$

B.  $4x-3y-25=0$

C.  $14x-23y-22=0$

D.  $x-y-5=0$

**Answer: B**



[Watch Video Solution](#)

78. The locus of the midpoints of chords of the circle  $x^2 + y^2 = 25$

which touch the circle  $(x - 12)^2 + (y - 5)^2 = 289$  is

A.  $(x^2 + y^2 - 12x - 5y)^2 = 289(x^2 + y^2)$

B.  $(x^2 + y^2 + 12x - 5y)^2 = 87(x^2 + y^2)$

$$C. (3x^2 - 3y^2 - 13x - 3y)^2 = 18(x^2 + y^2)$$

$$D. (x^2 + y^2 + 15x + 15y)^2 = 89(x^2 - y^2)$$

**Answer: A**



[View Text Solution](#)

**79.** The locus of the midpoints of chords of the circle  $x^2 + y^2 = 4$  which subtends a right angle at the origin is

$$A. x^2 + y^2 = 2$$

$$B. x^2 + y^2 = 4r^2$$

$$C. x^2 + y^2 = 8r^2$$

$$D. x^2 + y^2 = r^2 / r^2$$

**Answer: A**



[Watch Video Solution](#)

80. The equation to the locus of the midpoints of chords of the circle

$x^2 + y^2 = r^2$  having a constant length  $2l$  is

A.  $x+y=2$

B.  $x^2 + y^2 = 1$

C.  $x^2 + y^2 = 2$

D.  $x+y=1$

Answer: C



Watch Video Solution

81. The equation to the locus of the midpoints of chords of the circle

$x^2 + y^2 = r^2$  having a constant length  $2l$  is

A.  $x^2 + y^2 = l^2$

B.  $x^2 + y^2 = r^2 - l^2$

C.  $x^2 + y^2 = r^2 + l^2$

$$D. x^2 + y^2 = 4l^2$$

**Answer: B**



**Watch Video Solution**

**82.** The length of the chords of the circle  $x^2 + y^2 - 2x - 6y - 15 = 0$  which makes an angle of  $60^\circ$  at  $(1,3)$  and the locus of the midpoints of all such chords are

A.  $5, 4(x^2 + y^2 - 2x - 6y) - 35 = 0$

B.  $10, (x^2 + y^2 - 2x - 6y) - 135 = 0$

C.  $15, (4x^2 + y^2 - 2x - 6y) - 35 = 0$

D.  $3, 4(x^2 + y^2 + 2x + 6y) - 35 = 0$

**Answer: A**



**Watch Video Solution**

83. The locus of the midpoints of the chords of the circle  $4x^2 + 4y^2 - 12x + 4y + 1 = 0$  which subtend an angle of  $\pi/3$  at its centre is a circle of radius

A.  $\frac{3}{4}$

B.  $\frac{3\sqrt{3}}{4}$

C.  $\frac{3}{2}$

D.  $4\sqrt{3}$

**Answer: B**



[View Text Solution](#)

84. The locus of the midpoints of chords of the circle  $x^2 + y^2 - 6x + 8y - 24 = 0$  which make an angle  $\tan^{-1} 12/5$  with the x-axis is

A.  $12x - 5y = 33$

B.  $5x + 12y = 33$

C.  $5x+12y+33=0$

D. none

**Answer: C**



[View Text Solution](#)

85. The locus of the midpoint of the chord of the circle  $x^2 + y^2 - 2x - 2y - 2 = 0$  which makes an angle of  $120^\circ$  at the centre is

A.  $x^2 + y^2 - 2x - 2y + 1 = 0$

B.  $x^2 + y^2 + x + y - 1 = 0$

C.  $x^2 + y^2 - 2x - 2y - 1 = 0$

D. none

**Answer: A**



[Watch Video Solution](#)



86.  $(a,b)$  is the midpoint of the chord AB of the circle  $x^2 + y^2 = r^2$ . The tangents at A,B meet at C, then the area of  $\triangle ABC =$

A.  $\frac{(a^2 + b^2 + r^2)^{3/2}}{\sqrt{a^2 + b^2}}$

B.  $\frac{(r^2 - a^2 - b^2)^{3/2}}{\sqrt{a^2 + b^2}}$

C.  $\frac{(a^2 - b^2 - r^2)^{3/2}}{\sqrt{a^2 + b^2}}$

D. none

**Answer: B**



**Watch Video Solution**

87. Find the equation of the pair of tangents

from  $(10, 4)$  to the circle  $x^2 + y^2 = 25$ .

A.  $9x^2 + 80xy - 75y^2 - 500x - 200y + 2900 = 0$

B.  $x^2 - 15y^2 - 6x + 60y - 51 = 0$

C.  $16x^2 + 20xy - 5y^2 - 36x + 90y - 261 = 0$

D.  $3x^2 - 10xy + 3y^2 = 0$

**Answer: A**



**Watch Video Solution**

**88.** Find the pair of tangents drawn from

$(3, 2)$  to the circle  $x^2 + y^2 - 6x + 4y - 2 = 0$

A.  $9x^2 + 80xy - 75y^2 - 500x - 200y + 2900 = 0$

B.  $x^2 - 15y^2 - 6x + 60y - 51 = 0$

C.  $16x^2 + 20xy - 5y^2 - 36x + 90y - 261 = 0$

D.  $3x^2 - 10xy + 3y^2 = 0$

**Answer: B**



**Watch Video Solution**

89. The equation of the tangents drawn from the origin to the circle

$$x^2 + y^2 - 2gx - 2fy + f^2 = 0 \text{ is}$$

A.  $x = 0, (f^2 - g^2)x - 2fgy = 0$

B.  $x = 1, (f^2 + 2g^2)x + 2fgy = 0$

C.  $x = 2, (2f^2 + 3g^2)x + 2fgy = 0$

D.  $x = 5, (3f^2 + 5g^2)x + 2fgy = 0$

**Answer: A**



**Watch Video Solution**

90. The angle between the tangents drawn from (0,0) to the circle

$$x^2 + y^2 + 4x - 6y + 4 = 0 \text{ is}$$

A.  $\sin^{-1} \frac{5}{13}$

B.  $\sin^{-1} \frac{5}{12}$

C.  $\sin^{-1} \frac{12}{13}$

D.  $\frac{\pi}{2}$

**Answer: C**



**Watch Video Solution**

91. If  $\theta$  is the angle between the tangents from  $(-1,0)$  to the circle  $x^2 + y^2 - 5x + 4y - 2 = 0$ , then  $\theta =$

A.  $2 \tan^{-1} \left( \frac{7}{4} \right)$

B.  $\tan^{-1} \left( \frac{7}{4} \right)$

C.  $2 \cot^{-1} \left( \frac{7}{4} \right)$

D.  $\cot^{-1} \left( \frac{7}{4} \right)$

**Answer: A**



**Watch Video Solution**

92. From any point on the circle  $x^2 + y^2 = a^2$  tangents are drawn to the circle  $x^2 + y^2 = a^2 \sin^2 \theta$ . The angle between them is

A.  $\theta/2$

B.  $\theta$

C.  $2\theta$

D. none

**Answer: C**



[Watch Video Solution](#)

93. The condition that the pair of tangents drawn from the origin to the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  may be at right angles is

A.  $g^2 + f^2 + c = 0$

B.  $g^2 + f^2 + c = c$

C.  $g^2 + f^2 = 2c$

$$D. 2(g^2 + f^2) = c$$

**Answer: C**



**Watch Video Solution**

**94.** The condition that the pair of tangents drawn from the origin to the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  may be at right angles is

A.  $g^2 + f^2 + c = 0$

B.  $g^2 + f^2 = c$

C.  $g^2 + f^2 = 2c$

D.  $2(g^2 + f^2) = c$

**Answer: A**



**Watch Video Solution**

95. The angle between a pair of tangents drawn from a point P to the circle  $x^2 + y^2 + 4x - 6y + 9 \sin^2 \alpha + 13 \cos^2 \alpha = 0$  is  $2\alpha$ . The equation of the locus of the point P is

A.  $x^2 + y^2 + 4x - 6y + 4 = 0$

B.  $x^2 + y^2 + 4x - 6y + 9 = 0$

C.  $x^2 + y^2 + 4x - 6y - 4 = 0$

D.  $x^2 + y^2 + 4x - 6y + 9 = 0$

**Answer: D**



[Watch Video Solution](#)

96. From any point on the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$  tangents are drawn to the circle  $x^2 + y^2 + 2gx + 2fy + c \sin^2 \alpha + (g^2 + f) \cos^2 \alpha = 0$ . The angle between the tangents is

A.  $\alpha$

B.  $2\alpha$

C.  $4\alpha$

D.  $\alpha/2$

**Answer: B**



**Watch Video Solution**

97. The tangents drawn from the origin  $x^2 + y^2 - 2rx - 2hy + h^2 = 0$  are perpendicular if

A.  $h=r+1$

B.  $h=-4$

C.  $r^2 + h^2 = 1$

D.  $r^2 = h^2$

**Answer: D**





Watch Video Solution

98. The parametric equation of the circle  $(x - 3)^2 + (y - 2)^2 = 100$  are

A.  $x = 3 + 10 \cos \theta, y = 2 + 10 \sin \theta$

B.  $x = 1, 1 + 5 \cos \theta, y = 5 \sin \theta$

C.  $x = -3 - 10 \cos \theta, y = 2 - 10 \sin \theta$

D.  $x = -5 + 10 \cos \theta, y = -6 + 10 \sin \theta$

Answer: A



Watch Video Solution

99. The coordinate of the point on the circle  $(x - 1)^2 + (y + 2)^2 = 9$

having  $\theta$  as the parameter are

A.  $(2 + 3 \cos \theta, 2 + 3 \sin \theta)$

B.  $(1 + 3 \cos \theta, -2 + 3 \sin \theta)$

C.  $(1 - 3 \cos \theta, -2 - 3 \cos \theta)$

D.  $(10 + 13 \cos \theta, -5 + 8 \sin \theta)$

**Answer: B**



**Watch Video Solution**

**100.** The parametric equation of the circle  $x^2 + y^2 + 8x - 6y = 0$  are

A.  $x = 4 + 5 \cos \theta, y = 3 + 5 \sin \theta$

B.  $x = -4 + 5 \cos \theta, y = 3 + 5 \sin \theta$

C.  $x = 4 + 5 \cos \theta, y = -3 + 5 \sin \theta$

D.  $x = -4 + 5 \cos \theta, y = -3 + 5 \sin \theta$

**Answer: B**



**Watch Video Solution**

101. The equation of the circle passing through the point  $(-1 + 3 \cos \theta, 2 + 3 \sin \theta)$  is

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

B.  $x^2 + y^2 + 2x - 4y - 4 = 0$

C.  $x^2 + y^2 - 14x + 16y - 32 = 0$

D.  $x^2 + y^2 - 20x - 40y - 40 = 0$

Answer: B



Watch Video Solution

102. Show that the locus of the point of inter section of the lines  $x \cos \theta + y \sin \theta = a$ ,  $x \sin \theta - y \cos \theta = b$ ,  $\theta$  is a parameter is a circle.

A. a

B. b

C.  $a^2 + b^2$

D.  $\sqrt{a^2 + b^2}$

**Answer: D**



**Watch Video Solution**

**103.** If  $x = -2 + 3 \cos \theta$ ,  $y = 1 + 3 \sin \theta$  then the locus of the point  $(x,y)$  is a circle with centre and radius

- A.  $(6,9), 2$
- B.  $(2,-1), 3$
- C.  $(-2,1), 3$
- D.  $(5,1), 5$

**Answer: C**



**Watch Video Solution**

104. The parametric equation  $x = 2a \frac{(1 - t^2)}{1 + t^2}$  and  $y = \frac{4at}{1 + t^2}$  represent a circle of radius

A.  $a/2$

B.  $a$

C.  $2a$

D.  $4a$

**Answer: C**



[Watch Video Solution](#)

105. If a straight line through  $C(-\sqrt{8}, \sqrt{8})$  making an angle  $135^\circ$  with the x-axis cuts the circle  $x = 5 \cos \theta, y = 5 \sin \theta$  in points A and B, then length of segment AB is

A. 5

B. 10

C. 15

D.  $15\sqrt{2}$

**Answer: B**



[Watch Video Solution](#)

**106.** The locus of the point of intersection of the tangents to the circle  $x = r \cos \theta, y = r \sin \theta$  at points whose parametric angles differ by  $\pi/3$  is

A.  $x^2 + y^2 = r^2$

B.  $x^2 + y^2 = 2r^2$

C.  $3(x^2 + y^2) = r^2$

D.  $3(x^2 + y^2) = 4r^2$

**Answer: D**



[Watch Video Solution](#)

107. Equation to the tangent at  $(a(1 + \cos \alpha), a \sin \alpha)$  on the circle  $x^2 + y^2 - 2ax = 0$  is

A.  $x \cos \alpha + y \sin \alpha = 2a \sin^2 \alpha / 2$

B.  $x \cos \alpha + y \sin \alpha = 2a \cos^2 \alpha / 2$

C.  $x \cos \alpha + y \sin \alpha = 2a$

D. none

**Answer: B**



[Watch Video Solution](#)

### Exercise 1D(Angle Between Circles)

1. The number of common tangents that can be drawn to the circles

$$x^2 + y^2 - 4x + 6y + 8 = 0, x^2 + y^2 - 10x - 6y + 14 = 0$$

A. touch internally

B. touch externally

C. intersecting at two points

D. are such that one completely lies outside the other

**Answer: B**



[Watch Video Solution](#)

2. Consider the circle  $x^2 + (y - 1)^2 = 9$ ,  $(x - 1)^2 + y^2 = 25$ . They are such that

A. these circles touch each other

B. one of these circles lies entirely inside the other

C. each of these circles lies outside the other

D. they intersect in two points

**Answer: B**



[View Text Solution](#)



3. If the two circles  $(x - 2)^2 + (y - 3)^2 = r^2$  and  $x^2 + y^2 - 10x + 2y + 17 = 0$  intersect in two distinct point then

A.  $2 < r < 8$

B.  $r < 2$

C.  $r = 2$

D.  $r > 2$

**Answer: A**



**Watch Video Solution**

4. The condition that the circles  $x^2 + y^2 + 2ax + c = 0$ ,  $x^2 + y^2 + 2by + c = 0$  may touch each other is

A.  $ab > 0, c < 0$

B.  $ab < 0, c > 0$

C.  $ab = 0, c > 0$

D.  $ab = 0, c < 0$

**Answer: D**



**Watch Video Solution**

5. Let A and B be any two point on each of the circles  $x^2 + y^2 - 8x - 8y + 28 = 0$  and  $x^2 + y^2 - 2x - 3 = 0$  respectively . If d is the distance between A and B then the set of all possible values of d is

A.  $1 \leq d \leq 9$

B.  $1 \leq d \leq 8$

C.  $0 \leq d \leq 8$

D.  $0 \leq d \leq 9$

**Answer: A**



**Watch Video Solution**

6. The circles  $x^2 + y^2 - 10x + 16 = 0$  and  $x^2 + y^2 = r^2$  intersect each other in two distinct points if

A.  $r < 2$

B.  $r > 8$

C.  $2 < r < 8$

D.  $2 \leq r \leq 8$

**Answer: C**



**Watch Video Solution**

7. If the 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

A.  $r < 2$

B.  $r=2$

C.  $r > 2$

D.  $2 < r < 8$

**Answer: D**



[Watch Video Solution](#)

8. If the circles  $x^2 + y^2 - 4x + 6y + 8 = 0$ ,  $x^2 + y^2 - 10x - 6y + 14 = 0$  touch each other, then the point of contact is

A. (3,-1)

B. (3,1)

C. (7,5)

D. (-7,-5)

**Answer: A**



[View Text Solution](#)

9. The point of contact of the circle

$$x^2 + y^2 + 2x + 2y + 1 = 0 \text{ and } x^2 + y^2 - 2x + 2y + 1 = 0$$

A. (0,1)

B. (0,-1)

C. (1,0)

D. (-1,0)

**Answer: B**



[Watch Video Solution](#)

10. The point at which the circles  $x^2 + y^2 - 4x - 4y + 7 = 0$  and  $x^2 + y^2 - 12x - 10y + 45 = 0$  touch each other is

A.  $\left(\frac{2}{5}, \frac{5}{6}\right)$

B.  $\left(\frac{14}{5}, \frac{13}{5}\right)$

C.  $\left(\frac{12}{5}, 2 + \frac{\sqrt{21}}{5}\right)$

D.  $\left(\frac{13}{5}, \frac{14}{5}\right)$

**Answer: B**



**Watch Video Solution**

11. If the circle  $x^2 + y^2 + 2ax + 4ay - 3a^2 = 0$  and  $x^2 + y^2 - 8ax - 6ay + 7a^2 = 0$  touch each other externally, the point of contact is

A. (a,a)

B. (0,a)

C. (a,0)

D. (-a,0)

**Answer: C**



[View Text Solution](#)

12. If the circles  $x^2 + y^2 = a^2$ ,  $x^2 + y^2 - 6x - 8y + 9 = 0$  touch externally then  $a =$

A. 1

B. -1

C. 21

D. 16

**Answer: A**



[Watch Video Solution](#)

13. If the circles  $(x - a)^2 + (y - b)^2 = r^2$ ,  $(x - b)^2 + (y - a)^2 = r^2$  touch each other then the point of contact is

A.  $\alpha^2 + \beta^2 = r^2$

B.  $\alpha^2 + \beta^2 = 2r^2$

C.  $(\alpha^2 + \beta^2) = 2r^2$

D.  $(\alpha^2 + \beta^2) = r^2$

**Answer: C**



**Watch Video Solution**

14. The condition that the circles  $x^2 + y^2 + 2ax + c = 0$ ,  $x^2 + y^2 + 2by + c = 0$  may touch each other is

A.  $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$

B.  $\frac{1}{a} + \frac{1}{b} = \frac{1}{c^2}$



$$\text{C. } \frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c}$$

$$\text{D. } \frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{c^2}$$

**Answer: C**



**Watch Video Solution**

15. The condition that the circles  $x^2 + y^2 + 2ax + 2by + c = 0$ ,  $x^2 + y^2 + 2bx + 2ay + c = 0$  to touch each other is

A.  $(a + b)^2 = c$

B.  $(a + b)^2 = 2c$

C.  $(a - b)^2 = c$

D.  $(a - b)^2 = 2c$

**Answer: B**



**Watch Video Solution**

16. The two circles  $x^2 + y^2 = ax$ ,  $x^2 + y^2 = c^2$  ( $c > 0$ ) touch each other if

A.  $a=2c$

B.  $|a|=2c$

C.  $2|a|=c$

D.  $|a|=c$

**Answer: D**



[Watch Video Solution](#)

17. The equation of the circle with centre  $(-1,1)$  and touch the circle

$x^2 + y^2 - 4x + 6y - 3 = 0$  externally is

A.  $x^2 + y^2 + 2x - 2y + 1 = 0$

B.  $2x^2 + 2y^2 + 12x - 2y + 1 = 0$

C.  $x^2 + y^2 + 2x + 12y + 11 = 0$

D.  $3x^2 + 4y^2 + 20x - 21y + 1 = 0$

**Answer: A**



**Watch Video Solution**

**18.** The equation of the circle radius is 5 and which touches the circle

$x^2 + y^2 - 2x - 4y - 20 = 0$  at this point (5,5) is

A.  $x^2 + y^2 - 18x - 16y + 120 = 0$

B.  $x^2 + y^2 + 18x + 16y - 120 = 0$

C.  $x^2 + y^2 - 18x - 16y - 120 = 0$

D.  $x^2 + y^2 + 18x + 16y + 120 = 0$

**Answer: A**



**Watch Video Solution**

19. The equation to the circle whose radius is 3 and which touches internally the circle  $x^2 + y^2 - 4x + 6y - 12 = 0$  at this point  $(-1,1)$  is

A.  $5x^2 + 5y^2 - 8x - 14y - 32 = 0$

B.  $5x^2 + 5y^2 + 8x + 14y + 32 = 0$

C.  $5x^2 + 5y^2 - 8x - 14y - 16 = 0$

D.  $5x^2 + 5y^2 - 8x + 14y - 32 = 0$

**Answer: D**



[Watch Video Solution](#)

20. The equation of the circle whose radius is 3 and which touches the circle  $x^2 + y^2 + 2x + 6y - 15 = 0$  externally at the point  $(2,1)$  is

A.  $5(x^2 + y^2) - 2x + 14y - 35 = 0$

B.  $x^2 + y^2 + 30x - 22y + 121 = 0$

C.  $x^2 + y^2 - 18x - 16y + 120 = 0$

$$D. x^2 + y^2 - 46x - 28y = 0$$

**Answer: A**



[View Text Solution](#)

21. The centre of the circle passing through the points (0,0), (1,0) and touching the circle  $x^2 + y^2 = 9$  is

A.  $\left(\frac{3}{2}, \frac{1}{2}\right)$

B.  $\left(\frac{1}{2}, \frac{3}{2}\right)$

C.  $\left(-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$

D.  $\left(\frac{1}{2}, -\sqrt{2}\right)$

**Answer: D**



[Watch Video Solution](#)

22. The locus of the centre of a circle which touches the line  $x \cos \alpha + y \sin \alpha = p$  and circle  $(x - a)^2 + (y - b)^2 = c^2$  is

A.  $(x - a)^2 + (y - b)^2 = (x \cos \alpha + y \sin \alpha - p \pm c)^2$

B.  $(x - a)^2 + (y - b)^2 = (x \cos \alpha - y \sin \alpha - p \pm c)^2$

C.  $(x - a)^2 + (y - b)^2 = (x \cos \alpha + y \sin \alpha - p \pm c)^2$

D.  $(x - a)^2 + (y - b)^2 = (x \cos \alpha + y \sin \alpha - p \pm c)^2$

**Answer: A**



[View Text Solution](#)

23. The locus of the centre of a circle which touches externally the circle  $x^2 + y^2 = a^2$  and  $x^2 + y^2 = 4ax$  externally has the equation.

A.  $x^2 - 6x - 10y + 4 = 0$

B.  $x^2 - 10x - 6y + 14 = 0$

C.  $y^2 - 6x - 10y + 14 = 0$

D.  $x^2 - 6x - 10y + 14 = 0$

**Answer: D**



**Watch Video Solution**

**24.** The locus of the centre of a circle which touches externally the circle  $x^2 + y^2 = a^2$  and  $x^2 + y^2 = 4ax$  externally has the equation.

A.  $12(x - a)^2 - 4y^2 = 3a^2$

B.  $9(x - a)^2 - 5y^2 = 2a^2$

C.  $8x^2 - 3(y - a)^2 = 9a^2$

D. none

**Answer: A**



**Watch Video Solution**

25. The locus of the centre of a circle which touches externally the circle  $x^2 + y^2 - 6x - 6y + 14 = 0$  and also touches the y-axis is given by the equation.

A.  $x^2 - 6x - 10y + 14 = 0$

B.  $x^2 - 10x - 6y + 14 = 0$

C.  $x^2 - 6x - 10y + 14 = 0$

D.  $y^2 - 10x - 6y + 14 = 0$

**Answer: D**



[Watch Video Solution](#)

26. The centres of those circles which touch the circle,  $x^2 + y^2 - 8x - 8y - 4 = 0$  externally and also the x-axis, lie on

A. a circle

B. an ellipse which is not a circle



C. a hyperbola

D. a parabola

**Answer: D**



[Watch Video Solution](#)

27. 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

A. an ellipse

B. a circle

C. a hyperbola

D. a parabola

**Answer: D**



[Watch Video Solution](#)

28. 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.  $\frac{1}{2}$

B.  $\frac{1}{4}$

C.  $\frac{\sqrt{3}}{\sqrt{2}}$

D.  $\frac{\sqrt{3}}{2}$

**Answer: B**



[Watch Video Solution](#)

29. The circles whose equations are  $x^2 + y^2 + 10x - 2y + 22 = 0$  and  $x^2 + y^2 + 2x - 8y + 8 = 0$  touch each other. The circle which touches both circles at the point of contact and passing through (0,0) is

A.  $9(x^2 + y^2) - 15x - 20y = 0$

B.  $5(x^2 + y^2) - 18x - 80y = 0$

C.  $7(x^2 + y^2) - 18x - 80y = 0$

D.  $x^2 + y^2 - 9x - 40y = 0$

**Answer: C**



[View Text Solution](#)

**30.** The number of common tangent to the circles

$x^2 + y^2 + 2x + 8y - 23 = 0$ ,  $x^2 + y^2 - 4x - 10y + 19 = 0$  is

A. 4

B. 2

C. 3

D. 1

**Answer: C**



[Watch Video Solution](#)

31. The number of common tangents to the circles  $x^2 + y^2 = 4$ ,  $x^2 + y^2 - 8x + 12 = 0$  is

- A. 1
- B. 2
- C. 3
- D. 4

**Answer: C**



[Watch Video Solution](#)

32. The number of common tangents to the circles  $x^2 + y^2 = 0$ ,  $x^2 + y^2 + x = 0$  is

- A. 2
- B. 1

C. 4

D. 3

**Answer: D**



[Watch Video Solution](#)

**33.** The number of common tangents that can be drawn to the circles

$$x^2 + y^2 = 1 \text{ and } x^2 + y^2 - 2x - 6y + 6 = 0 \text{ is}$$

A. 1

B. 2

C. 3

D. 4

**Answer: D**



[Watch Video Solution](#)

34. The number of common tangents to the circles

$$x^2 + y^2 - 8x + 2y = 0 \text{ and } x^2 + y^2 - 2x - 16y + 25 = 0 \text{ is}$$

A. 1

B. 2

C. 3

D. 4

**Answer: B**



[Watch Video Solution](#)

35. The number of common tangents to the circle

$$x^2 + y^2 - 4x - 6y - 12 = 0 \text{ and } x^2 + y^2 + 6x + 18y + 26 = 0 \text{ is}$$

A. 1

B. 2

C. 3

D. 4

**Answer: C**



[Watch Video Solution](#)

36. The condition that the circles  $x^2 + y^2 + 2ax + 2by + c = 0$ ,  $x^2 + y^2 + 2bx + 2ay + c = 0$  touch each other is

A.  $(a + b)^2 = 2c$

B.  $(a - b)^2 = 2c$

C.  $a + b + c = 0$

D. none

**Answer: A**



[Watch Video Solution](#)

37. The two circles  $(x - a)^2 + y^2 = c$  and  $(y - b)^2 + x^2 = 4c$  have only one real common tangent then

A.  $a^2 + b^2 = c$

B.  $b^2 + c^2 = a^2$

C.  $a^2 + b^2 = 4c^2$

D.  $a^2 + b^2 = 9c$

**Answer: A**



[View Text Solution](#)

38. If the circles  $x^2 + y^2 - 6x - 8y + c = 0$  and  $x^2 + y^2 = 9$  have three common tangent then  $c =$

A. 18

B. 19

C. 20



D. 21

**Answer: D**

 [Watch Video Solution](#)

**39.** If only one common tangent can be drawn to the circles

$x^2 + y^2 - 2x - 4y - 20 = 0$  and  $(x + 3)^2 + (y + 1)^2 = p^2$ , then  $p =$

A. 20

B. 16

C. 49

D. 10

**Answer: D**

 [View Text Solution](#)

40. The internal centre of similitude of the two circles

$$x^2 + y^2 + 6x - 2y + 1 = 0, x^2 + y^2 - 2x - 6y + 9 = 0 \text{ is}$$

- A. (1,1/2)
- B. (-1/3,-1)
- C. (0,5/2)
- D. (0,1)

**Answer: C**



[Watch Video Solution](#)

41. The external centre of similitude of the two circles

$$x^2 + y^2 - 2x - 6y + 9 = 0, x^2 + y^2 = 4 \text{ is}$$

- A. (-13,1)
- B. (22,-4)
- C. (2,6)

D. (6,10)

**Answer: C**



**Watch Video Solution**

**42.** The centres of similitude of the circles

$$x^2 + y^2 - 2x - 6y + 6 = 0, x^2 + y^2 = 1 \text{ is}$$

A.  $(1/3,1),(-1,-3)$

B.  $(1/5,-1) (-1,-5)$

C.  $(1/3,1) (1,3)$

D.  $(-1/3,-1) (-1,-3)$

**Answer: A**



**Watch Video Solution**

43. Find the direct common tangents of the circles

$$x^2 + y^2 + 22x - 4y - 100 = 0 \text{ and } x^2 + y^2 - 22x + 4y + 100 = 0$$

A.  $3x+4y-50=0, 7x-24y-250=0$

B.  $5x+2y-40=0, x-24y-250=0$

C.  $3x+4y-50=0, 7x+24y-250=0$

D.  $2x+8y-150=0, 7x-24y-150=0$

**Answer: A**



[Watch Video Solution](#)

44. The equations to the transverse common tangents to the circles

$$x^2 + y^2 - 4x - 10y + 28 = 0, x^2 + y^2 + 4x - 6y + 4 = 0 \text{ are}$$

A.  $x-1=0, 3x+4y-21=0$

B.  $x-1=0, 3x+4y-5=0$

C.  $y-1=0, 3x+4y-5=0$

D.  $x-1=0, 3x+4y+21=0$

**Answer: A**



[View Text Solution](#)

45.  $P(-1,-3)$  is a centre of similitude of for the two circles  $x^2 + y^2 = 1$  and  $x^2 + y^2 - 2x - 6y + 6 = 0$ . The length of the common tangent through P to the circles is

A. 2

B. 3

C. 4

D. 5

**Answer: B**



[Watch Video Solution](#)

46. If  $(2,6)$  is a centre of similitude for the circle  $x^2 + y^2 = 4$  and  $x^2 + y^2 - 2x - 6y + 9 = 0$ , the length of the common tangent of circles through is

A. 9

B. 3

C. 6

D. 4

**Answer: B**



[Watch Video Solution](#)

47. For the circles  $x^2 + y^2 = 1$  and  $(x - 1)^2 + (y - 3)^2 = 4$  the line  $4x - 3y = 5$  is a

A. common chord

B. direct common tangent

C. transverse common tangent

D. common tangent

**Answer: B**



[View Text Solution](#)

48. For the circles

$x^2 + y^2 + 4x + 3y + 2y = 4 = 0$ ,  $x^2 + y^2 + 4x - 2y + 4 = 0$  the line  $3x$

is a

A. common chord

B. direct common tangent

C. transverse common tangent

D. common tangent

**Answer: B**



[View Text Solution](#)

49. The common tangents to the circles

$$x^2 + y^2 - 6x = 0, x^2 + y^2 + 2x = 0 \text{ form}$$

- A. equilateral triangle
- B. isosceles triangle
- C. righta angled triangle
- D. none

**Answer: A**



[Watch Video Solution](#)

## Exercise 2(Special Type Questions)

1. I : The equation of the circles centric with

$$x^2 + y^2 - 2x + 8y - 23 = 0 \text{ and passing through } (2,3) \text{ is}$$

$$x^2 + y^2 - 2x + 8y - 33 = 0$$



11. The equation of the circles passing through the points (1,1), (2,-1),(3,2) is

$$x^2 + y^2 - 5x + y + 4 = 0$$

- A. only I is true
- B. only II is true
- C. both I and II are true
- D. neither I nor II true

**Answer: C**

 [View Text Solution](#)

2. The nearest point on the circle

$$x^2 + y^2 - 6x + 4y - 12 = 0 \text{ from } (-5, 4) \text{ is}$$

- A. only I is true
- B. only II is true
- C. both I and II are true

D. neither I nor II true

**Answer: B**

 [Watch Video Solution](#)

3. I. The locus of the point of intersection of two perpendicular tangents to the circle  $x^2 + y^2 = a^2$  is  $x^2 + y^2 = 3a^2$ .

II. The locus of the point of intersection of the perpendicular tangents to the circles  $x^2 + y^2 = a^2$ ,  $x^2 + y^2 = b^2$  is  $x^2 + y^2 = a^2 + b^2$

A. only I is true

B. only II is true

C. both I and II are true

D. neither I nor II true

**Answer: C**

 [View Text Solution](#)

4. I. The locus of the point from which the length of the tangents to the two circles  $x^2 + y^2 + 4x + 3 = 0$ ,  $x^2 + y^2 - 6x + 5 = 0$  are in the ratio 2:3 is a circle with centre  $(-6,0)$

II. The length of the chord  $x=3y+13$  of the circle  $x^2 + y^2 - 4x + 4y + 3 = 0$  is  $\sqrt{10}$ .

- A. only I is true
- B. only II is true
- C. both I and II are true
- D. neither I nor II true

**Answer: B**



[View Text Solution](#)

5. Statement I The circle  $x^2 + y^2 - 6x - 4y - 7 = 0$  touches y-axis

Statement II The circle  $x^2 + y^2 + 6x + 4y - 7 = 0$  touches x-axis

Which of the following is a correct statement ?

A. Both I and II are true

B. Neither I nor II is true

C. I is true, II is false

D. I is false, II is true

**Answer: D**



**Watch Video Solution**

## Set 2

1. If  $a, b, c$ , are the radii of the circles  $x^2 + y^2 - 6x - 8y = 0$ ,  $x^2 + y^2 + 4x - 6y - 3 = 0$ ,  $x^2 + y^2 + 6x + 8y -$   
then the ascending order of  $a, b, c$  is

A.  $a, b, c$

B.  $b, c, a$

C.  $a, c, b$

D. b,a,c

**Answer: D**



[View Text Solution](#)

2. If the equation of the circle passing through the points (3,4), (3,2), (1,4)

is  $x^2 + y^2 + 2ax + 2by + c = 0$  then the ascending order of a,b,c is

A. a,b,c

B. b,c,a

C. a,c,b

D. b,a,c

**Answer: A**



[View Text Solution](#)

3. If  $a, b, c$  are the lengths of tangents from  $(0,0)$  to the circles  $x^2 + y^2 - 3x - 4y + 1 = 0$ ,  $x^2 + y^2 + 4x - 6y + 4 = 0$ ,  $x^2 + y^2 - 6x - 1$  then the ascending order of  $a, b, c$  is

A.  $a, b, c$

B.  $b, c, a$

C.  $a, c, b$

D.  $b, a, c$

**Answer: B**



[View Text Solution](#)

4. If  $P_1, P_2, P_3$  are the perimeters of the three circles  $x^2 + y^2 + 8x - 6y = 0$ ,  $4x^2 + 4y^2 - 4x - 12y - 186 = 0$  and  $x^2 + y^2 - 6$  respectively, then

A.  $P_1 < P_2 < P_3$

B.  $P_1 < P_3 < P_2$

C.  $P_3 < P_2 < P_1$

D.  $P_2 < P_3 < P_1$

**Answer: C**



**Watch Video Solution**

**Set 3**

1. Match the following

I.  $x^2 + y^2 - 4x + 6y - 11 = 0$

II.  $x^2 + y^2 - 6x - 8y + 12 = 0$

III.  $x^2 + y^2 + 2x + 2y - 5 = 0$

a) (3, 4)

b) (-1, -1)

c) (2, -3)

A. a,b,c

B. b,c,a

C. c,a,b

D. a,c,b

Answer: C



Watch Video Solution

2. Match the following

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

II.  $x^2 + y^2 - 4x - 2y - 4 = 0$

III.  $x^2 + y^2 + 6x + 8y - 96 = 0$

a) 3

b) 5

c) 11

A. a,b,c

B. b,c,a

C. c,a,b

D. a,c,b

Answer: C



View Text Solution



3. Match the following

I.  $x^2 + y^2 = 25$ ,  $2x - 3y + 5 = 0$

a)  $(2, -3)$

II.  $x^2 + y^2 - 5x + 8y + 6 = 0$ ,  $x - 2y + 22 = 0$

b)  $(6, 8)$

III.  $x^2 + y^2 - 6x - 8y + 5 = 0$ ,  $3x + 4y - 45 = 0$

c)  $(-2, 3)$

A. a,b,c

B. b,c,a

C. c,a,b

D. a,c,a

**Answer: B**



[View Text Solution](#)

4. For the circle C with the equation  $x^2 + y^2 - 16x - 12y + 64 = 0$

match the list-I with the list-II given below:

**List - I**

- i) The equation of the polar of  $(-5, 1)$  with respect to  $C$
- ii) The equation of the tangent at  $(8, 0)$  to  $C$
- iii) The equation of the normal at  $(2, 6)$  to  $C$
- iv) The equation of the diameter of  $C$  through  $(8, 12)$

**List - II**

- a)  $y = 0$
- b)  $y = 6$
- c)  $x + y = 7$
- d)  $12x + 5y = 98$
- e)  $x = 8$

A. I) d. ii). b, iii). a, iv). c

B. I) d. ii). a, iii). b, iv). e

C. I) c. ii). d, iii). a, iv). b

D. I) c. ii). e, iii). b, iv). a

**Answer: C**



**View Text Solution**

5. Given the circle  $C$  with the equation  $x^2 + y^2 - 2x + 10y - 38 = 0$

Match the List-I with the List-II given below concerning  $C$ :

**List-I**

- i) The equation of the polar of  $(4, 3)$  with respect to  $C$
- ii) The equation of the tangent at  $(9, 5)$  on  $C$
- iii) The equation of the normal at  $(-7, -5)$  on  $C$
- iv) The equation of the diameter of  $C$  passing through  $(1, 3)$

**List-II**

- a)  $y + 5 = 0$
- b)  $x = 1$
- c)  $3x + 8y = 27$
- d)  $x + y = 3$
- e)  $x = 9$

A. I) c. ii). a, iii). e, iv). b

B. I) d. ii). e, iii). a, iv). B

C. I) c. ii). e, iii). a, iv). b

D. I) d. ii). b, iii). a, iv). e

**Answer: A**



**View Text Solution**

1. A: The equation of the circle  $(2,-3), (-3,2)$  as ends of a diameter is

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

R: The equation of the circle having the line segment joining

$A(x_1, y_1)$  and  $B(x_2, y_2)$  as diameter

$$(x - x_1)(x - x_2) + (y - y_1)(y - y_2) = 0$$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is false

**Answer: A**



[Watch Video Solution](#)

2. A: length of the intercept made by the circle

$$x^2 + y^2 - 12x + 14y + 11 = 0 \text{ on x-axis is } 10.$$

R: The length of the intercept made by the circle  $S=0$  on y-axis is  $\sqrt{f^2 - c}$ .

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is false

**Answer: B**



[View Text Solution](#)

3. A: The polar of  $(2,3)$  with respect to the circle

$$x^2 + y^2 - 4x - 6y + 5 = 0 \text{ is } 2x + 3y = 0$$

R: The polar of  $(x_1, y_1)$  with respect to the circle  $S = 0$  is  $S_1 = 0$

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not the correct explanation of A

C. A is true but R is false

D. A is false but R is false

**Answer: D**



**Watch Video Solution**

4. A: The angle between the tangent drawn from origin to the circle  $x^2 + y^2 - 14x + 2y + 25 = 0$ , is  $\pi/2$ .

R: If  $\theta$  is the angle between the pair of tangents drawn from  $(x_1, y_1)$  to the circle  $S=0$  of the radius  $r$  then  $\theta \tan \frac{\theta}{2} = \frac{r}{\sqrt{S_1}}$

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true and R is not the correct explanation of A
- C. A is true but R is false
- D. A is false but R is false

**Answer: A**



**View Text Solution**