MATHS

BOOKS - MAHAVEER PUBLICATION

CO-ORDINATE GEOMETRY OF TWO DIMENSIONS (CONIC SECTION)

Question Bank

1. Find the equation of the circle passing through the three

Points (0,0) ,(a,0) and (0,b).

Watch Video Solution

2. Find the equation of the circle which touches the lines x=0 ,y=0 and x=c

Watch Video Solution

3. Two lines 2x-3y=5 and 3x-4y=7 are diameters of a circle of area 154 sq units. Then find the equation of the circle.

Watch Video Solution

4. Find the equation of the circle which passes through the points $(1, -2), (4, -3)$ and whose center lies on the line $3x + 4y = 7$.

Watch Video Solution

5. Without drawing the figure determine whether the points (0,0),(-2,1),(4,-3),(2,6),(0,-1)

lie outside the circle or on or inside the circle

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

Watch Video Solution

6. Find the equation of the tangent at the point (0,2) to the circle

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

Watch Video Solution

7. Prove that the tangents from the point (0,5) to the two circles $x^2 + y^2 + 2x - 4 = 0$ and $x^2 + y^2 - 6x - 4y + 16 = 0$ are of equal length.

Watch Video Solution

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

Watch Video Solution

9. Find the equations to the common tangents of the circles $x^2 + y^2 - 2x - 6y + 9 = 0$ and $x^2 + y^2 + 6x - 2y + 1 = 0$

Watch Video Solution

10. Find the equation of the normal to the circle $x^2 + y^2 = 25$ At the point (4,3)

Watch Video Solution

11. Find the equation of the normal to the circle $x^2 + y^2 = 25$ from the point (5,,6)

Watch Video Solution

12. Find the equation of the normal to the circle $x^2 + y^2 = 25$ of slope =3

Watch Video Solution

13. Find the equation of the normal to the circle $x^2 + y^2 - 6x - 8y = 0$ At the point(6,8)

Watch Video Solution

14. Find the equation of the normal to the circle $x^2 + y^2 - 6x - 8y = 0$ from the point(1,6)

Watch Video Solution

15. Find the equation of the normal to the circle $x^2 + y^2 - 6x - 8y = 0$ of slope =4

Watch Video Solution

16. The length of the diameter of the circle $x^2 + y^2 - 4x - 6y + 4 = 0$ is -

A. 9

B. 3

C. 4

D. 6

Answer: D

Watch Video Solution

17. Which of the following is the equation of circle

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

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

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

D. $3\left(x^2+y^2\right)+5x+1=0$

Answer: D

Watch Video Solution

18. The equation of the circle passing through (3,6) and whose centre (2,-2) is

A. $x^2+y^2-4x+2y=45$

B. $x^2+y^2-4x+4y=57$

C. $x^2+y^2+4x-2y=45$

D. $x^2 + y^2 - 4x + 2y + 45 = 0$

Answer: A

 Watch Video Solution

19. If (4,3) and (-12,-1) are the end points of a diameter of a circle then the equation of the circle is

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

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

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

D. none of these

Answer: B

Watch Video Solution

20. The radius of the circle passing through the points (0,0),(1,0)and(0,1) is

A. 2

B. $\frac{1}{\sqrt{2}}$

C. $\sqrt{2}$

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

Answer: B

Watch Video Solution

21. The radius of a circle with centre (a, b) and passing through the centre of the circle $x^2 + y^2 - 2gx + f^2 = 0$ is -

A. $\sqrt{(a-g)^2 + b^2}$

B. $\sqrt{a^2+(b+g)^2}$

C. $\sqrt{a^2+(b-g)^2}$

D. $\sqrt{(a+g)^2+b^2}$

Answer: A

Watch Video Solution

22. If (x, 3) and (3,5) are the extremities of a diameter of a circle with centre at (2, y), then the value of x and y are

A. x=1,y=4

B. x=4,y=1

C. x=8 , y=2

D. none of these

Answer: A

 Watch Video Solution

23. If (0,1) and (1,1) are ends points of a diameter of a circle then its equation is

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

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

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

D. none of these

Answer: A

Watch Video Solution

24. The co-ordinates of any point on the circle $x^2 + y^2 = 4$ are

A. $(\cos\alpha, \sin\alpha)$

B. $(4\cos\alpha, 4\sin\alpha)$

C. $(2\cos\alpha, 2\sin\alpha)$

D. $(\sin\alpha, \cos\alpha)$

Answer: C

Watch Video Solution

25. The parametric coordinates of a point on the circle $x^2 + y^2 - 2x + 2y - 2 = 0$ are

A. $(1-2\cos\alpha, 1-2\sin\alpha)$

B. $(1+2\cos\alpha, 1+2\sin\alpha)$

C. $(1+2\cos\alpha, -1+2\sin\alpha)$

D. $(-1+2\cos\alpha, 1+2\sin\alpha)$

Answer: C

Watch Video Solution

26. If the equation

$$px^2+(2-q)xy+3y^2-6qx+30y+6q=0$$

represents a circle, then find the values of $p and q$.

A. 2,2

B. 3,1

C. 3,2

D. 3,4

Answer: C

Watch Video Solution

27. The circle represented by the equation $x^2 + y^2 + 2gx + 2fy + c = 0$ will be a point circle, if

A. $g^2 + f^2 = C$

B. $g^2 + f^2 + c = 0$

C. $g^2 + f^2 > c$

D. none of these

Answer: A

Watch Video Solution

28. The point where the line x=0 touches the circle $x^2 + y^2 - 2x - 6y + 9 = 0$ is

A. (0,1)

B. (0,2)

C. (0,3)

D. no where

Answer: C

Watch Video Solution

29. Position of the point $(1, 1)$ with respect to the circle $x^2 + y^2 - x + y - 1 = 0$ is

A. outside the circle

B. inside the circle

C. upon the circle

D. none of these

Answer: A

 Watch Video Solution

30. The equation to a circle with centre(2,1) and touching x axis is

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

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

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

D. none of these

Answer: B

Watch Video Solution

31. The circle $x^2 + y^2 - 4x - 4y + 4 = 0$ is

A. touches x axis only

B. touches both axis

C. passes through the origin

D. touches y axis only

Answer: B

Watch Video Solution

32. The equation of tangents drawn from the point (0,1) to the circle $x^2 + y^2 - 4x - 2y + 4 = 0$ are

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

B. 2x-y-1=0 ,x+2y-2=0

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

D. $x = \pm\sqrt{3}(y-1)$

Answer: A

Watch Video Solution

33. If y=c is a tangent to the circle $x^2 + y^2 - 2x + 2y - 2 = 0$ at (1, 1), then the value of c is

A. 1

B. 2

C. -1

D. -2

Answer: A

Watch Video Solution

34. The equation of the normal to the circle $x^2 + y^2 = 9$ at the point $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ is

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

B. x+y=0

C. x-y=0

D. none of these

Answer: C

Watch Video Solution

35. The equation of the normal at the point (4,-1) of the circle $x^2 + y^2 - 40x + 10y = 153$ is

A. x+4y=0

B. 4x+y=3

C. x-4y=0

D. 4x-y=0

Answer: A

Watch Video Solution

36. Find the equation of the circle with centre(1,2) and radius 2

 Watch Video Solution

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

 Watch Video Solution

38. Find the equation of the circle with center $\left(\frac{1}{2}, \frac{1}{3}\right)$ and radius $\frac{1}{6}$.

Watch Video Solution

39. Find the equation of the circle with centre(-1,-3) and radius $\sqrt{3}$

Watch Video Solution

40. Find the equation of the circle with centre(h,k) and radius $\sqrt{h^2 + k^2}$

Watch Video Solution

41. Find the centre and the radius of the given circles. $(x + 1)^2 + (y - 2)^2 = 9$

Watch Video Solution

42. Find the centre and radius of the circle

$(x+2)^2+(y+3)^2=5$

Watch Video Solution

43. Find the centre and the radius of the circle

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

Watch Video Solution

44. Find the centre and radius of the circles

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

Watch Video Solution

45. Find the equation of the tangenet to each circle at the point specified, Circle

$x^2 + y^2 - 2x - 4y - 20 = 0$, point (4,-2)

Watch Video Solution

46. Find the equation of the tangenet to each circle at the point specified, Circle $x^2 + y^2 + 4x + 2y - 20 = 0$, point (1,3)

Watch Video Solution

47. Find the equation of the tangenet to each circle at the point specified, Circle $x^2 + y^2 - 6x + 4y - 87 = 0$, point (-3,-10)

Watch Video Solution

48. Find the equation of the circle passing through the points (4, 1) and (6, 5) and whose centre is on the line $4x + y = 16$.

Watch Video Solution

49. Find the equation of the circle passing through the points $(2, \quad 3)$ and $(1, \quad 1)$ and whose centre is on the line $x \quad 3y \quad 11 \quad = \quad 0$.

Watch Video Solution

50. Find the equation of the circle with radius 5 whose centre lies on xaxis and passes through the point (2, 3).

Watch Video Solution

51. Find the equation of the circle passing through (0, 0) and making intercepts a and b on the coordinate axes.

Watch Video Solution

52. Find the equation of a circle with centre (2, 2) and passes through the point (4, 5).

Watch Video Solution

53. Does the point (-2,4) lie inside . Outside or on the circle $x^2 + y^2 = 25$

Watch Video Solution

54. The square of the length of tangent from (3, –4) on the circle $x^2 + y^2 - 4x - 6y + 3 = 0$

Watch Video Solution

55. If the circles $x^2 + y^2 + 2x - 8y + 8 = 0$ and $x^2 + y^2 + 10x - 2y + 22 = 0$ touch each other find their point of contact

Watch Video Solution

56. If the lines 2x-3y+1=0 and 3x+y-4=0 lie along diameters of a circle of circumference is 10π . Then find the equation of the circle.

Watch Video Solution

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

Watch Video Solution

58. The equation of the circle passing through the point $(1, 0)$ and $(0, 1)$ and having the smallest radius is

Watch Video Solution

59. The centre of a circle passing through the points (0, 0), (1, 0) and touching the circle $x^2 + y^2 = 9$, is

Watch Video Solution

60. Find the number of common tangents to the circles $x^2 + y^2 = 4$ and $x^2 + y^2 - 6x - 8y = 24$

Watch Video Solution

61. Find the points of intersection of the line y=2x+1 and the circle $x^2 + y^2 - 2y = 0$. Find the equation of the tangent to the circle at one of the point of intersection.

Watch Video Solution

62. Find the points of intersection of the line $x + y = 3$ and the circle $x^2 + y^2 - 2x - 2y + 1 = 0$ what are the tangents at the point of intersection?

Watch Video Solution

63. Find the points where the circle $x^2 + y^2 - 10x - 10y + 40 = 0$ and the line y+2x=10 intersect.Find the equation of the

tangent to the circle at each of the points of intersection.

Watch Video Solution

64. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $y^2 = 12x$

Watch Video Solution

65. Find the co-ordinate of the focus, axis, equation of the directrix and latus rectum of the parabola $x^2 = -4y$

Watch Video Solution

66. Find the equation of the parabola with focus $(2, 0)$ and directrix $x = -2$.

Watch Video Solution

67. Find the equation of the parabola which is symmetric about the X-axis, centered at origin and passes through the point(4,-6).

Watch Video Solution

68. $\frac{x^2}{16} + \frac{y^2}{9} = 1$

Watch Video Solution

69. Find the equation of the ellipse whose vertices are $(\pm 6, 0)$ and foci are $(\pm 4, 0)$.

Watch Video Solution

70. Find the equation of the ellipse,whose length of the major axis is 10 and foci are $(0, \pm 2)$.

Watch Video Solution

71. Find the equation of the ellipse which passes through the points (2,0) and (0,1).

Watch Video Solution

72. Find the coordinates of the foci and the vertices, the eccentricity and the length of the latus rectum of the hyperbolas. $16x^2 - 9y^2 = 576$

Watch Video Solution

73. The equation of the hyperbola with foci $(0, \pm 5)$ and vertices $(0, \pm 3)$ is

Watch Video Solution

74. Find the equation of the hyperbola where foci are $(0, \pm 12)$and the length of the latus rectum is 36.

Watch Video Solution

75. The focus of the parabola $y^2 = 16x$ is

A. (2,0)

B. (3,0)

C. (4,0)

D. (6,0)

Answer: C

Watch Video Solution

76. The length of the latus rectum of the parabola $y^2 = 8x$ is

A. 4

B. 6

C. 8

D. 10

Answer: A

Watch Video Solution

77. Find the equation of the parabola with focus $(2, 0)$ and directrix $x = -2$.

A. $y^2 = 8x$

B. $y^2 = 6x$

C. y^2=4x`

D. $y^2 = 10x$

Answer: A

Watch Video Solution

78. The equation of the parabola passes through the parabola (1,1) and (2,4)

A. $y^2 = x$

B. $x^2 = y$

C. $x^2 = 4y$

D. $y^2 = 4x$

Answer: B

Watch Video Solution

79. The coordinate of foci of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$ is

A. (-4,0) and (4,0)

B. (-3,0) and (3,0)

C. (-9,0) and(9,0)

D. (-5,0) and (5,0)

Answer: A

 Watch Video Solution

80. Eccentricity of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$ is

A. $\frac{4}{5}$

B. $\frac{5}{4}$

C. $\frac{3}{5}$

D. $\frac{4}{9}$

Answer: C

Watch Video Solution

81. The length of the major axis of the ellipse is

$9x^2 + 4y^2 = 36$

A. 2

B. 4

C. 6

D. 8

Answer: C

Watch Video Solution

82. The equation of the ellipse passes through the points (4,0) and (0,2) is

A. $\frac{x^2}{4} + \frac{y^2}{16} = 1$

B. $\frac{x^2}{16} + \frac{y^2}{4} = 1$

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

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

Answer: B

Watch Video Solution

83. The coordinate of foci of the hyperbola $\frac{x^2}{9} - \frac{y^2}{16} = 1$ is

A. $(\pm 4, 0)$

B. $(\pm 5, 0)$

C. $(\pm 6, 0)$

D. $(\pm 3, 0)$

Answer: D

 Watch Video Solution

84. Find the length of the axes , the coordinates of the vertices and the foci, the eccentricity and length of the latus rectum of the hyperbola

$y^2 - 16x^2 = 16.$

A. $\frac{\sqrt{17}}{4}$ and $\frac{1}{2}$

B. $\frac{\sqrt{17}}{2}$ and $\frac{1}{4}$

C. $\frac{\sqrt{17}}{4}$ and $\frac{1}{4}$

D. $\frac{\sqrt{17}}{8}$

Answer: D

Watch Video Solution

85. Find the coordinates of the focus, axis of the parabola, the equation of the directrix and the length of the latus rectum.$x^2 = 6y$

Watch Video Solution

86. Find the coordinates of the focus,axis of the parabola, the equation of the directrix and length of the latus rectum $y^2 = -8x$

Watch Video Solution

87. Vertex (0, 0) passing through (2,3) and axis is along x-axis.

Watch Video Solution

88. Find the equation of the parabola with vertex (0,0) and focus (3,0).

Watch Video Solution

89. Find the equation of the parabola with focus F(0,-3) and directrix y=3.

Watch Video Solution

90. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of the latus rectum of the ellipse $\frac{x^2}{4}+\frac{y^2}{16}=1$

Watch Video Solution

91. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of the latus rectum of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$

Watch Video Solution

92. The equation of the ellipse whose vertices are $(\pm 5, 0)$ and foci at $(\pm 4, 0)$ is

Watch Video Solution

93. Find the equation of the ellipse in the following case: ends of major axis $(\pm 3, 0)$ ends of minor axis $(0, \pm 2)$

Watch Video Solution

94. Find the equation of the ellipse having, length of major axis 26 and foci $(\pm 5, 0)$

Watch Video Solution

95. Find the coordinates of the foci and the vertices, the eccentricity and the length of the latus rectum of the hyperbolas. $9y^2 - 4x^2 = 36$

Watch Video Solution

96. Find the coordinates of the foci and the vertices, the eccentricity and the length of the latus rectum of the hyperbolas. $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Watch Video Solution

97. Find the equation of the hyperbola having : vertices $(0, \pm 3)$ and $foci(0, \pm 5)$.

Watch Video Solution

98. Find the equations of the hyperbola satisfying the given conditions :Foci $(\pm 4, 0)$, the latus rectum is of length 12

Watch Video Solution

99. Find the equations of the hyperbola satisfying the given conditions :Foci $(\pm 5, 0)$, the transverse axis is of length 8.

Watch Video Solution

100. Find the equations of the hyperbola satisfying the given conditions :Foci $(0, \pm 13)$, the conjugate axis is of length 24.

Watch Video Solution

101. Find the eccentricity and length of the latus rectum of the ellipse $x^2 + 2y^2 = 3$

Watch Video Solution

102. What are the lengths of major axis and minor of the ellipse $9x^2 + 16y^2 = 144$

Watch Video Solution

103. Find the coordinates of the centre,vertices, foci and the equation of the directrices of the hyperbola $9x^2 - 16y^2 = 144$

Watch Video Solution

104. The parabola $y^2 = 4$ px passes through are point (1,2). Find the co-ordinate of focus, length of latus rectum and equation of directrix of the parabola.

Watch Video Solution

105. Find the coordinates of foci, equation of directrices of the ellipse $\frac{x^2}{9}+\frac{y^2}{4}=1$

Watch Video Solution

106. Find the equation of the parabola with focus at (1,-3) and the directrix x-2y+3=0.

Watch Video Solution

107. Find the co-ordinate of focus and the equation of the directrix of the parabola $y^2 = 4ax$, if it passes through the point(3,-2).

Watch Video Solution

108. Find the vertex, focus, length of the latus rectum , equation of directrix of the parabola $3y^2 = 5x$.

Watch Video Solution

109. If the eccentricities of the ellipses $\frac{x^2}{\alpha^2} + \left| \frac{y^2}{\beta^2} = 1 \right.$ and $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ be same show that $a\beta = b\alpha$

Watch Video Solution

110. Find the length of latus rectum, equation of directrices of the ellipse $12x^2 + 9y^2 = 144.$

Watch Video Solution