MATHS

BOOKS - KC SINHA MATHS (HINGLISH)

CONIC SECTIONS - FOR BOARDS

Solved Examples

1. The equation of the parabola whose focus is $(1, 1)$ and the directrix is $x + y + 1 = 0$

Watch Video Solution

2. Find the equation of the parabola whose focus is $(1, -1)$ and whose vertex is $(2, 1)$. Also find the axis and latusrectum.

Watch Video Solution

3. Find the focus and the equation of the parabola whose vertex is $(6, -3)$ and directrix is $3x - 5y + 1 = 0$

Watch Video Solution

4. Find the equation of the parabola whose focus is$(1, 1)$ and tangent at the vertex is $x + y = 1$.

Watch Video Solution

5. Find the equation of the parabola with vertex at origin, symmetric with respect to y-axis and passing through $(2, -3)$

Watch Video Solution

6. Find the equation of the parabola whose axis is parallel to x-axis and which passes through points (0,0), (1,1) and (2, 3)`

Watch Video Solution

7. Find the equation of the parabola whose latus-rectum is 4 units, axis is the line 3x+4y-4=0 and the tangent at the vertex is the line 4x-3y+7=0

Watch Video Solution

8. Find the equation of the parabola the extremities of whose latus rectum are (1, 2) and (1, -4).

Watch Video Solution

9. The equation of the parabola whose vertex and focus lie on the axis of x at distances a and a_1 from the origin, respectively, is

$y^2 - 4(a_1 - a)x$ $y^2 - 4(a_1 - a)(x - a)$

$y^2 - 4(a_1 - a)(x - a)1)$ $noneofthese$

Watch Video Solution

10. Find the axis, vertex, tangent at the vertex, focus, directrix and length of latus rectum of the parabola $x^2 = -16y$.

Watch Video Solution

11. Find the vertex, focus, directrix and length of the latus rectum of the parabola $y^2 - 4y - 2x - 8 = 0$

Watch Video Solution

12. Find the vertex, axis, focus, directrix, tangent at the vertex, and length of the latus rectum of the parabola $2y^2 + 3y - 4x - 3 = 0$.

Watch Video Solution

13. The focal distance of a point on the parabola $y^2 = 12\xi s4$. Find the abscissa of this point.

Watch Video Solution

14. Find the axis, tangent at the vertex, vertex, focus, directrix and latus rectum of the parabola $9y^2 - 16x - 12y - 57 = 0$

Watch Video Solution

15. Find the angle made by a double ordinate of length $8a$ at the vertex of the parabola $y^2 = 4ax$.

Watch Video Solution

16. An equilateral trinalge is inscribed in the parabola $y^2 = -8x$, where one vertex is at the vertex of the parabola. Find the length of the side of the tringle.

Watch Video Solution

17. Find the area of the triangle formed by the lines joining the vertex of the parabola $x^2 = -36y$ to the ends of the latus rectum.

Watch Video Solution

18. Prove that the area of the traingle inscribed in the parabola $y^2 = 4ax$ is $\frac{1}{8a}(y_1 \sim y_2)(y_2 \sim y_3)(y_3 \sim y_1)$, where y_1, y_2, y_3 are the ordinates of the vertices.

Watch Video Solution

19. If a parabolic reflector is 20 cm in diameter and 5 cm deep, find the focus.

Watch Video Solution

20. An arch is in the form of a parabola with its axis vertical. The arch is 10 m high and 5 m wide at the base. How wide is it 2 m from the vertex of the parabola?

Watch Video Solution

21. The cable of a uniformly loaded suspension bridge hangs in the form of a parabola. The roadway which is horizontal and 100m long is supported by vertical wires attached to the cable, the longest wire being 30m and the

shortest being 6m. Find the length of the supporting wire attached to the roadway 18m from the middle.

Watch Video Solution

22. Find the equation to the ellipse, whose focus is the point $(-1, 1)$, whose directrix is the straight line $x - y + 3 = 0$, and whose eccentricity is $\frac{1}{2}$.

Watch Video Solution

23. Find the equation of the ellipse whose axes are parallel to the coordinate axes having its centre at the point $(2, -3)$ one focus at $(3, -3)$ and vertex at $(4, -3)$.

Watch Video Solution

24. Find the equation of the ellipse having axes long the coordinate axes and passing through the points $(4, 3)$ and $(-1, 4)$.

Watch Video Solution

25. Find the equation of the ellipse whose foci are $(2, 3), (-2, 3)$ and whose semi-minor axis is $\sqrt{5}$.

Watch Video Solution

26. Find the equation of the ellipse the extremities of whose minor axis are $(3, 1)$ and $(3, 5)$ and whose eccentricity is $\frac{1}{2}$.

Watch Video Solution

27. The equation of the ellipse with its centre at $(1, 2)$, one focus at $(6, 2)$ and passing through the point $(4, 6)$ is-

Watch Video Solution

28. Find the equation of the ellipse whose axes are along the coordinate axes, foci at $(0, \pm 4)$ and eccentricity 4/5.

Watch Video Solution

29. Find the equation of an ellipse the distance between the foci is 8 units and the distance between the directrices is 18 units.

Watch Video Solution

30. Find the equation of the ellipse with foci at $(\pm 5, 0) and x = \frac{36}{5}$ as one of the directrices.

Watch Video Solution

31. Find the equation of the ellipse that passes through the origin and has the foci at the points $(-1, 1)$ and $S'(1, 1)$.

Watch Video Solution

32. Find the length and equation of major and minor axes, centre, eccentricity, foci, equation of directrices, vertices and length of latus rectum of the ellipses : $\frac{x^2}{225} + \frac{y^2}{289} = 1$

Watch Video Solution

33. 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.$16x^2 + y^2 = 16$

Watch Video Solution

34. For the ellipse $12x^2 + 4y + 24x - 16y + 25 = 0,$

Watch Video Solution

35. Find the latus rectum, the eccentricity and coordinates of the foci of the ellipse $9x^2 + 5y^2 + 30y = 0$.

Watch Video Solution

36. A rod of length 12 cm moves with its ends always touching the coordinate axes. Determine the equation of the locus of a point P on the rod, which is 3cm from the end in contact with the x-axis.

Watch Video Solution

37. A rod AB of length $15cm$ rests in between two coordinate axes in such a way that the end point A lies on $x - a\xi s$ and end point B lies on $y - a\xi s$. A point is taken on the rod in such a way that $AP = 6cm$. Show that the locus of P is an ellipse. Also find its eccentricity.

Watch Video Solution

38. An arch way is in the shape of a semi-ellipse, the road level being the major axis. If the

breadth of the arch way is 30 feet and a man 6 feet tall just touches the top when 2 feet from the side, find the greatest height of the arch.

Watch Video Solution

39. An arc is in the form of a semi-ellipse. It is $8m$ wide and $2m$ high at the centre. Find the height of the arch at a point $1.5cm$ from one end.

Watch Video Solution

40. A man running a racecourse notes that the sum of the distances from the two flag posts from him is always 10 m and the distance between the flag posts is 8 m. Find the equation of the posts traced by the man.

Watch Video Solution

41. Find the equation of the hyperbola whose one directrix is $2x + y = 1$, the corresponding focus is $(1, 2)$ and eccentricity is $\sqrt{3}$

Watch Video Solution

42. Find the equation of the hyperbola having $e = 32$ and foci at $(\pm 3, 0)$

Watch Video Solution

43. Find the equation of the hyperbola having eccentricity $e = \frac{4}{3}$ and vertices at $(0, \pm 7)$.

Watch Video Solution

44. Find the equation of the hyperbola, the length of whose latus rectum is 8, eccentricity is $\frac{3}{\sqrt{5}}$ and whose transverse and conjugate axes are along the x and y axes respectively.

Watch Video Solution

45. Find the equation of the hyperbola having vertices at $(\pm 5, 0)$ and foci at $(\pm 7, 0)$

Watch Video Solution

46. Find the equation of the hyperbola whose eccentricity is $\sqrt{2}$ and the distance between the foci is 16, taking transverse and conjugate axes of the hyperbola as x and $y-axes$ respectively.

Watch Video Solution

47. Referred to the principal axes as the axes of coordinates find the equation of the hyperbola whose foci are at $(0, \pm\sqrt{10})$ and which passes through the point $(2, 3)$.

Watch Video Solution

Watch Video Solution

48. Find the equation of the hyperbola for which the distance between focie is $32, e = 2\sqrt{2}$ and transverse and conjugate axes are along x and $y - axes$ respectively.

Watch Video Solution

49. The foci of a hyperbola coincide with the foci of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1.$ Find the equation of the hyperbola, if its eccentricity is 2.

Watch Video Solution

50. Find the length of the transverse axis, conjugate axis, eccentricity, vertices, foci and directrices of the hyperbola $9x^2 - 16y^2 = 144$.

Watch Video Solution

51. Find the length of axes of the ellipse whose eccentricity is 4/5 and whose foci coincide with those of the hyperbola $9x^2 - 16y^2 + 144 = 0$

Watch Video Solution

52. Find the length of the transverse and conjugate axes, eccentricity, centre, foci and directrices of the hyperbola. 9x^2 - 16y^2 - 72x + 96y - 144 = 0`

Watch Video Solution

53. Find the centre, eccentricity and foci of the hyperbola, $9x^2 - 16y^2 - 18x - 64y - 199 = 0$

Watch Video Solution

54. If e and e' are the eccentricities of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and its conjugate hyperbola, prove that $\frac{1}{e^2} + 1 + e'^2 = 1$

Watch Video Solution

55. If S ans S' are the foci, C is the center , and P is point on the rectangular hyperbola, show that $SP \times SP = (CP)^2$

Watch Video Solution

56. Find the equation of the locus of all points such that difference of their distances from $(4, 0)$ and $(-4, 0)$ is always equal to 2.

Watch Video Solution

Exercise

1. Find the equaiton of the parabola whose focus is $(0, -2)$ and directrix is $y = 2$.

Watch Video Solution

2. Find the equaiton of the parabola whose focus is $(0, -3)$ and $directrixis$y=3`.

Watch Video Solution

3. Find the equaiton of the parabola whose focus is $(4, 0)$ and directrix is $x = -4$

Watch Video Solution

4. Find the equation of the parabola whose focus is (6, 0) and directrix is $x = -6$.

Watch Video Solution

5. Find the equation of the parabola whose focus is (2, 0) and directrix is $x = -2$.

Watch Video Solution

6. Find the equation of the parabola whose focus is $(-1, 2)$ and $directrix is$x-2y-15=0`.

Watch Video Solution

7. Find the equation of the parabola whose focus is (2, 3) and directrix is $x - 2y - 6 = 0$.

Watch Video Solution

8. The equation of the parabola with vertex at the origin passing through $(2, 3)$ and the axis along x-axis is

Watch Video Solution

9. Find the equation of the parabola whose focus is at $(-1, 1)$ and the directrix is $x + y + 1 = 0$.

Watch Video Solution

10. Find the equation to the parabola whose focus is $(5, 3)$ and directrix the line $3x - 4y + 1 = 0$.

Watch Video Solution

11. Find the equation of the parabola if the focus is the point $\left(\frac{5}{4}, -1\right)$ and the directrix is $4x - 13 = 0$.

Watch Video Solution

12. Find the equation of the parabola having ther vertex at $(0, 1)$ and the focus at $(0, 0)$.

Watch Video Solution

13. Find the equation of the parabola with vertex at (0, 0) and focus at (0, 2).

Watch Video Solution

14. Find the equation of the parabola, if the focus is at $(-6, -6)$ and the vertex is at $(-2, 2)$

Watch Video Solution

15. Find the equation of the parabola whose focus is $(3, 0)$ and vertex is $(0, 0)$.

Watch Video Solution

16. Find the equation of the parabola having vertex at (0, 0) and focus at $(-2, 0)$.

Watch Video Solution

17. Find the equation of the parabola passing through (5, 2), having vertex at (0, 0) and

symmetric about y-axis.

Watch Video Solution

18. The equation of the parabola with vertex at the origin passing through $(2, 3)$ and the axis along x-axis is

Watch Video Solution

19. Find the equation of the parabola whose focus is at (0, 0) and vertex is at the intersection

of the line $x + y = 1$ and $x - y = 3$.

Watch Video Solution

20. Prove that the equation of the parabola whose focus is (0, 0) and tangent at the vertex is $x - y + 1 = 0$is

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

Watch Video Solution

21. Find the equation of the parabola with vertex is at $(2, 1)$ and the directrix is $x = y - 1$.

Watch Video Solution

22. Find the equaiton to the parabola whose axis is parallel to y-axis and which passes through the point $(0, 4), (1, 9)$ and $(-2, 6)$. Determine its latus rectum.

Watch Video Solution

23. Equation of parabola which has its axis along x-axis and which passes through the points $(3, 2)$ and $(-2, -1)$ is

Watch Video Solution

24. The equations of the parabolas the extremities of whose latus rectum are $(3, 5)$ and $(3, -3)$

Watch Video Solution

25. Find the equation of the parabola with its axis parallel to x-axis and which passes through the points $(1, 2), (-1, 3)$ and $(-2, 1)$.

Watch Video Solution

26. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $x^2 = 6y$

Watch Video Solution

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

Watch Video Solution

28. 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

29. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $x^2 = -9y$

Watch Video Solution

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

Watch Video Solution

31. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $y^2 = 10x$

Watch Video Solution

32. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $y^2 = -8x$

Watch Video Solution

33. For each of that parabolas, find the coordinates of the focus, the equation of the directrix and the length of latus rectum : $x^2 = 6y$

Watch Video Solution

34. Find the vertex, focus, axis and latus rectum of the parabola $4y^2 + 12x - 20y + 67 = 0.$

Watch Video Solution

35. Find the vertex, focus, axis, directrix and latus rectum of that parabola : $(y-2)^2 = 3(x+1)$

Watch Video Solution

36. Find the vertex, focus, axis, directrix and latus rectum of that parabola : $y^2 - 3x - 2y + 7 = 0$

Watch Video Solution

37. Find the vertex and the directrix of the parabola $y^2 - 3x - 2y + 7 = 0$

Watch Video Solution

38. Find the focus and directrix of the parabola $3x^2 + 12x + 8y = 0.$

Watch Video Solution

39. Find the equation of the parabola with focus (5, 0), and directrix $x = -5$. Also, find the

length of the latus rectum.

Watch Video Solution

40. Find the equation of the circle described on the line segment joining the foci of the parabolas $x^2 - 4ay$ and $y^2 = 4a(x - a)$ as diameter.

Watch Video Solution

41. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$ whose vertex is at of the parabola. Find the length of its side.

Watch Video Solution

42. Find the area of the triangle formed by the lines joining the vertex of the parabola $x^2 = 12y$to the ends of its latus rectum.

Watch Video Solution

43. PQ is a double ordinate of a parabola $y^2 = 4ax$. Find the locus of its points of trisection.

Watch Video Solution

44. The focus of a parabolic mirror as shown in the figure alongside is at a distance of 6cm from its vertex. If the mirror is 20cm deep, find the distance L.M.

Watch Video Solution

45. A water jet from a function reaches it maximum height of 4 m at a distance 0.5 m from the vertical passing through the point O of water outlet. The height of the jet above the horizontal OX at a distance of 0.75 m from the point O is 5 m (b) 6 m (c) 3 m (d) 7 m

Watch Video Solution

46. over the towers of a bridge a cable is hung in the form of a parabola, have their tops 30 meters above the road way are 200 meters

apart. If the cable is 5 meters above the road way at the centre of the bridge, then the length of the vertical supporting cable 30 meters from the centre is

Watch Video Solution

47. Find the equation to the ellipse, whose focus is the point $(-1, 1)$, whose directrix is the straight line $x - y + 3 = 0$, and whose eccentricity is $\frac{1}{2}$.

Watch Video Solution

48. Find the equation of the ellipse whose : One focus is $(6, 7)$, directrix is $x + y + 2$ and eccentricity is $\frac{1}{\sqrt{3}}$

Watch Video Solution

49. Find the equation to the ellipse whose one focus is (2, 1), the directrix is $2x - y + 3 = 0$ and the eccentricity is $\frac{1}{\sqrt{2}}$

Watch Video Solution

50. Find the equation of the ellipse with centre at the origin, the length of the major axis 12 and one focus at (4, 0).

Watch Video Solution

51. Find the equation of the ellipse whose centre is (-2,3) and whose semi axis are 3 and 2 when major axis is i. parallel to x-axis ii. parallel to y-axis.

Watch Video Solution

52. Find the equation of an ellipse whose vertices are $(0, \pm 10)$ and eccentricity $e = \frac{4}{5}$

Watch Video Solution

53. Find the equation for the ellipse that satisfies the given conditions:Vertices $(0, \pm 13)$, foci $(0, \pm 5)$

Watch Video Solution

54. Find the equation of the ellipse : $(\pm 5, 0)$ and foci at $(\pm 4, 0)$

Watch Video Solution

55. Find the equation of the ellipse : having vertices at $(\pm 13, 0)$ and foci at $(\pm 5, 0)$

Watch Video Solution

56. Find the equation of the ellipse : having vertices at $(\pm 6, 0)$ and foci at $(\pm 4, 0)$

Watch Video Solution

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

Watch Video Solution

58. Find the equation of the ellipse, whose length of the major axis is 20 and foci are $(0, \pm 5)$.

Watch Video Solution

59. Find the equation of the ellipse having, length of major axis 8 and foci $(\pm 3, 0)$

Watch Video Solution

60. Find the equation of the ellipse having, length of major axis 16 and foci $(0, \pm 6)$

Watch Video Solution

61. Find the equation of the ellipse passing through the point $(3, 2)$, having centre at

$(0, 0)$ and major axis on $y-$ axis.

Watch Video Solution

62. Find the equation for the ellipse that satisfies the given conditions:Ends of major axis $(0, \pm\sqrt{5})$, ends of minor axis $(\pm 1, 0)$

Watch Video Solution

63. If a be the length of semi-major axis, b the length of semi-minor axis and c the distance of

one focus from the centre of an ellipse, then find the equation of the ellipse for which centre is (0, 0), foci is on x-axis, $b = 3 \text{ and } c = 4$.

Watch Video Solution

64. The distance between the foci of an ellipse is 10 and its latus rectum is 15, find its equation referred to its axes as axes of coordinates.

Watch Video Solution

65. Find the equation of the ellipse whose minor axis is equal to distance between the foci and latus rectum is 10.

Watch Video Solution

66. The eccentricity of an ellipse is $\frac{1}{2}$ and the distance between its foci is 4 units. If the major and minor axes of the ellipse are respectively along the x and y axes, find the equation of the ellipse

Watch Video Solution

67. Find the equation of the ellipse passing through (6, 4), foci on y-axis, centre at the origin and having eccentricity $\frac{3}{4}$.

Watch Video Solution

68. Find the equation of the ellipse passing through (4, 1) with focus as $(\pm 3, 0)$

Watch Video Solution

69. Find the equation of the set of all points whose distances from $(0, 4) are \frac{2}{3}$ of their distances from the line $y = 9$.

Watch Video Solution

70. Find the equation to the ellipse whose foci are $(4, 0)$ and $(-4, 0)$ and eccentricity is $\frac{1}{3}$.

Watch Video Solution

71. Find the equation to the ellipse (referred to its axes as the axes of $x\ and\ y$ respectively) which passes through the point (-3,1) and has eccentricity $\sqrt{\frac{2}{5}}$

Watch Video Solution

72. If the angle between the lines joining the foce of any ellipse to an extremity of the minor axis is 90^0, find the accentricity. Find also the equation of the ellipse if the major axis is $2\sqrt{2}$.

Watch Video Solution

73. For the ellipse $9x^2 + 16y^2 = 144$, find the length of the major and minor axes, the eccentricity, the coordinatse of the foci, the vertices and the equations of the directrices.

Watch Video Solution

74. Find the lengths of the major and the minor axes, the coordinates of the foci, the vertices, the eccentricity, the length of latus rectum and

the eqatuion of the directrices of that ellipses :

$$\frac{x^2}{169} + \frac{y^2}{25} = 1$$

Watch Video Solution

75. Find the lengths of the major and the minor axes, the coordinates of the foci, the vertices, the eccentricity, the length of latus rectum and the eqatuion of the directrices of that ellipses :

$$\frac{x^2}{25} + \frac{y^2}{169} = 1$$

Watch Video Solution

76. Find the lengths of the major and the minor axes, the coordinates of the foci, the vertices, the eccentricity, the length of latus rectum and the eqatuion of the directrices of that ellipses : $3x^2 + 2y^2 = 18$

Watch Video Solution

77. Find the lengths of the major and the minor axes, the coordinates of the foci, the vertices, the eccentricity, the length of latus rectum and

the eqatuion of the directrices of that ellipses :

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

Watch Video Solution

78. 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.$4x^2 + 9y^2 = 36$

Watch Video Solution

79. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of latus rectum of that ellipses: $9x^2 + 4y^2 = 36$

Watch Video Solution

80. 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.$36x^2 + 4y^2 = 144$

Watch Video Solution

81. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of latus rectum of that ellipses: $25x^2 + 4y^2 = 100$

Watch Video Solution

82. 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. $\frac{x^2}{100} + \frac{y^2}{400} = 1$

Watch Video Solution

83. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of latus rectum of that ellipses: $\frac{x^2}{25} + \frac{y^2}{9} = 1$

Watch Video Solution

84. 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. $\frac{x^2}{25} + \frac{y^2}{100} = 1$

Watch Video Solution

85. 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. $\frac{x^2}{49} + \frac{y^2}{36} = 1$

Watch Video Solution

86. Find the coordinates of the foci, the vertices, the length of major axis, the minor axis, the eccentricity and the length of latus rectum of that ellipses: $8x^2 + 6y^2 - 16x + 12y + 13 = 0$

Watch Video Solution

87. Show that the following equation represents an ellipse and find its centre and eccentricity : $8x^2 + 6y^2 - 16x + 12y + 13 = 0$

Watch Video Solution

88. Find the centre, the length of the axes and the accentricity of the ellipse : $x^2 + 3y^2 - 4x - 12y + 13 = 0$

Watch Video Solution

89. Eccentricity of the ellipse $4x^2 + y^2 - 8x + 2y + 1 = 0$ is

Watch Video Solution

90. Find the latus rectum, eccentricity, coordinates of the foci and the length of axes of that ellipses : $9x^2 + 5y^2 - 30y = 0$

Watch Video Solution

91. Find the latus rectum, eccentricity, coordinates of the foci and the length of axes of that ellipses : $4x^2 + 9y^2 - 8x - 36y + 4 = 0$

Watch Video Solution

92. Find the eccentricity of an ellipse if its latus rectum is equal to one-half of its major axis.

Watch Video Solution

93. Find the eccentricity of an ellipse if its latus rectum is one-third of its major axis.

Watch Video Solution

94. A rod AB of length 15 cm rests in between two coordinate axes in such a way that the end

point A lies on x-axis and end point B lies on y-axis. A point P(x, y) is taken on the rod in such a way that AP = 6 cm. Show that the locus of P is an ellip

Watch Video Solution

95. Find the equation of the hyperbola whose : focus is (2,2) directrix is $x + y = 9$ and eccentricity $= 2$.

Watch Video Solution

96. The equation of the directrix of a hyperbola is $x - y + 3 = 0$. Its focus is (-1,1) and eccentricity 3. Find the equation of the hyperbola.

Watch Video Solution

97. Find the equation of the hyperbola whose conjugate axis is 5 and the distance between the foci is 13.

Watch Video Solution

98. Find the equation of the hyperbola having foci $(0, \pm 4)$ and transverse axis of length. 6.

Watch Video Solution

99. Find the equation of the hyperbola with vertices at $(0, \pm 6)$ and eccentricity $\frac{5}{3}$.

Watch Video Solution

100. Find the equations of the hyperbola satisfying the given conditions :Vertices

$(0, \pm 5), foci(0, \pm 8)$

Watch Video Solution

101. Find the equation of the hyperbola having :

vertices $(0, \pm 3)$ and $foci(0, \pm 5)$.

Watch Video Solution

102. Find the equation of the hyperbola with foci

$(0, \pm 3)$and vertices $\left(0, \pm \frac{\sqrt{11}}{2}\right)$

Watch Video Solution

103. find the equation of hyperbola having Vertices $(\pm 2, 0)$ and $foci(\pm 3, 0)$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

106. Find the equations of the hyperbola satisfying the given conditions :Foci $(\pm 3\sqrt{5}, 0)$, the latus rectum is of length 8.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

109. Find the equation of the hyperbola having vertices $(\pm 7, 0)$ and $e = \frac{4}{3}$.

Watch Video Solution

110. Find the equation of the hyperbola whose vertices are $(\pm 7, 0)$ and $e = \frac{4}{3}$.

Watch Video Solution

111. if in a hyperbola the eccentricity is $\sqrt{3}$ and the distance between the foci is 9 then the

equation of hyperbola in the standard form is:

Watch Video Solution

112. The equation of the hyperbola, whose foci are $(6, 4)$ and $(-4, 4)$ and eccentricity is 2, is

Watch Video Solution

113. The coordinates of the foci of a hyperbola are $(\pm 6, 0)$ and its latus rectum is of 10 units. Find the equation of the hyperbola.

Watch Video Solution

114. Find the equation to the hyperbola referred to its axes as coordinate axes whose conjugate axis is 7 and passes through the point $(3, -2)$.

Watch Video Solution

115. In the hyperbola $4x^2 - 9y^2 = 36$, find the axes, the coordinates of the foci, the eccentricity, and the latus rectum.

Watch Video Solution

116. Find the coordinates of the vertices, the foci, the eccentricity and the equations of directrices of the hyperbola $4x^2 - 25y^2 = 100$.

Watch Video Solution

117. Find the coordinates to the vertices, the foci, the eccentricity and the equation of the directrices of the hyperbola : $3x^2 - 2y^2 = 1$

Watch Video Solution

118. Find the eccentricity, coordinates of the foci equations of directrices and length of the latus rectum of the hyperbola $16x^2 - 9y^2 = 144$

Watch Video Solution

119. Find the coordinates to the vertices, the foci, the eccentricity and the equation of the directrices of the hyperbola : $16y^2 - 4x^2 = 1$

Watch Video Solution

120. Find the coordinates to the vertices, the foci, the eccentricity and the equation of the directrices of the hyperbola : $y^2 - 16x^2 = 16$.

Watch Video Solution

121. 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

122. Find the coordinates of the foci and the vertices, the eccentricity and the length of the latus rectum of the hyperbolas. $49y^2 - 16x^2 = 784$

Watch Video Solution

123. Find the foci, vertices, eccentricity and length of latus rectum of the hyperbola : $3y^2 - x^2 = 27.$

Watch Video Solution

124. Find the coordinates of the foci and the vertices, the eccentricity and the length of the latus rectum of the hyperbolas.$5y^2 - 9x^2 = 36$

Watch Video Solution

125. Find the foci, vertices, eccentricity and length of latus rectum of the hyperbola : $\frac{y^2}{4} - \frac{x^2}{9} = 1.$

Watch Video Solution

126. Find the centre, eccentricity, foci and directrices of the hyperbola : $16x^2 - 9y^2 + 32x + 36y - 164 = 0$

Watch Video Solution

127. Show that the equation $9x^2 - 16y^2 - 18x - 64y - 199 = 0$ represents a hyperbola. Fof this hyperbola, find the length of axes, eccentricity, centre, foci, vertices, latus rectum and directrices.

Watch Video Solution

128. Find the length of axes, eccentricity, centre, foci and latus rectum of the hyperbola $16x^2 - 3y^2 - 32x - 12y - 44 = 0.$

Watch Video Solution

129. The hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ passes through the point of intersection of the lines $7x + 13y - 87 = 0$ and $5x - 8y + 7 = 0$ and its latus rectum is $32\frac{\sqrt{2}}{5}$. Find a and b.

Watch Video Solution

130. PN is the ordinate of any point P on the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and $\forall'$ is its transvers axis. If Q divides AP in the ratio $a^2 : b^2$, then prove that NQ is perpendicular to $A'P$.

Watch Video Solution

131. Prove that the locus of the point of intersection of the lines $\sqrt{3}x - y - 4\sqrt{3}k = 0$ and $\sqrt{3}kx + ky - 4\sqrt{3} = 0$ for different values of k is a hyperbola whose eccentricity is 2.

Watch Video Solution