MATHS

BOOKS - V PUBLICATION

CONIC SECTIONS

Question Bank

1. Find an equation of the circle with centre at (0,0) and radius 2.

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2. Find the equation of the circle with centre $(-3, 2)$ and radius 4 .

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3. Find the centre and the radius of the circle $x^2 + y^2 + 8x + 10y - 8 = 0$

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

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5. Find the equation of the circle in following cases.

centre (0,2) and radius 2.

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6. Find the equation of the circle in following cases.

centre (-2,3) and radius 4.

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7. Find the equation of the circle with Centre $\left(\frac{1}{2}, \frac{1}{4}\right)$ and radius $\frac{1}{12}$.

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8. Find the equation of the circle with Centre $(1, 1)$ and radius $\sqrt{2}$.

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9. find the equation of the circle with Centre $(-a, -b)$ and radius $\sqrt{a^2 - b^2}$

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10. Find the centre and radius of the circles $(x+5)^2+(y-3)^2=36$.

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11. Find the centre and radius of the following circles.

$x^2+y^2-4x-8y-45=0$

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12. Find the centre and radius of the circle.

$x^2 + y^2 - 8x + 10y - 12 = 0.$

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13. Find the centre and radius of the following circles.

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

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

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

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16. Find the equation of the circle with radius 5 whose centre lies on x-axis and passes through the point (2,3).

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

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18. Find the equation of the circle with centre (2,2) and passing through the point(4,5).

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19. Does the point $(-2.5, 3.5)$ lie inside, outside or on the circle $x^2 + y^2 = 25$?

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20. Find the Focus, vertex and latus rectum of the parabola $y^2 = 8x$.

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

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

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23. Find the equation of the parabola which is symmetric about the y- axis, and passes through the point $(2, -3)$

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

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

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26. Find the coordinates of the focus, axis of the parabola, the equation of the directrix and the length of the latus rectum $x^2 = -16y$

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27. Find the coordinates of the focus, axis of the parabola, the equation of the directrix and the length of the latus rectum $y^2 = 10x$

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28. Find the coordinates of the fòcus, axis of the parabola, the equation of the directrix and the length of the latus rectum $x^2 = -9y$

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29. Find the equation of the parabola satisfying the following condition,

focus(6,0), directrix $x = -6$.

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30. Find the equation of the parabola,Focus $(0, -3)$, directrix $y = 3$

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31. Find the equation of the parabola satisfying the following condition,

Vertex (0,0), Focus (3,0).

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32. Find the equation of the parabola,Vertex (0,0) focus (-2,0).

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33. Find the equation of the parabola satisfying the following condition,

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

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34. Find the equation of the parabola whose vertex is (0,0) which is passing through (5,2) and which is symmetric with respect to y-axis

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35. Find the coordinate of the foci,the length of the major axis, minor axis, latus rectum and eccentricity of the ellipse $\frac{x^2}{25} + \frac{y^2}{9} = 1$

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36. Find the coordinates of the foci, the vertices, the lengths of major and minor axes and the eccentricity of the ellipse $9x^2 + 4y^2 = 36.$

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37. Find the equation of the ellipse vertices are $(\pm 13, 0)$ and foci are $(\pm 5, 0)$

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

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39. An ellipse whose major axis as x-axis and the centre (0,0) passes through (4,3) and (-1,4). Find is eccentricity.

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40. 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. $\frac{x^2}{36} + \frac{y^2}{16} = 1$

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41. Find the coordinate of the foci, the verticles,the length of major axis, the minor axis, the eccentricity and the length of the latus rectum of the ellipse.

$$\frac{x^2}{4} + \frac{y^2}{25} = 1$$

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42. Find the coordinate of the foci, the verticles,the length of major axis, the minor axis, the eccentricity and the length of the

latus rectum of the ellipse.

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

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43. Find the coordinates of the focii,vertices,eccentricity and the length of the latus Rectum of the ellipse $100x^2 + 25y^2 = 2500.$

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

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

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46. 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.$16x^2 + y^2 = 16$

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47. Find the ellipse satisfying the following conditions:

vertex $(\pm 5, 0)$, foci $(\pm 4, 0)$

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48. Find the equation for the ellipse for Vertices $(0, \pm 13)$, foci $(0, \pm 5)$

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49. Find the equation for the ellipse for Vertices $(\pm 6, 0)$, foci $(\pm 4, 0)$

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50. Find the equation for the ellipse for Ends of major axis $(\pm 3, 0)$, ends of minor axis $(0, \pm 2)$.

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51. Find the equation for the ellipse for ends of major axis $\left(0, \pm \sqrt{5}\right)$, ends of minor axis $(\pm 1, 0)$

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52. Find the ellipse satisfying the following conditions:

Length of the major axis 26, foci$(\pm 5, 0)$.

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53. Find the equation for the ellipse for Length of minor axis 16, foci $(0, \pm 6)$.

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54. Find the equation for the ellipse for Foci $(\pm 3, 0), a = 4$

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55. Find the ellipse satisfying the following conditions:

$b = 3, c = 4$, centre at origin, foci on the x-axis.

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56. Centre at (0,0), major axis on the y-axis and passes through the points (3,2) and (1,6).

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57. Find the equation for the ellipse for Major axis on the x-axis and passes through the points $(4, 3)$ and $(6, 2)$.

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58. Find the coordinates of the foci and the vertices, the eccentricity, the length of the latus rectum of the hyperbolas

$Q1) \frac{x^2}{9} - \frac{y^2}{16} = 1$

$Q2) y^2 - 16x^2 = 16$

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59. Find the equation of the hyperbola with foci $(0, \pm 3)$ and vertices $\left(0, \pm \frac{\sqrt{11}}{2}\right)$.

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

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61. Determine the eccentricity and length of latus rectum of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$

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62. Find the coordinates of foci, the vertices, eccentricity and length of latus rectum of the following hyperbolas.

$$\frac{y^2}{9} - \frac{x^2}{27} = 1$$

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63. Consider the conic find $9y^2 - 4x^2 = 36$

Length of latus rectum.

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

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65. Find the coordinates of foci, the vertices, eccentricity and length of latus rectum of the following hyperbolas.

$5y^2 - 9x^2 = 36$

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

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67. Find the equations of the hyperbola,Vertices $(0, \pm 5)$, foci $(0, \pm 8)$.

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68. Find the equations of the hyperbola,Vertices $(0, \pm 3)$, foci $(0, \pm 5)$.

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69. Find the hyperbola satisfying the following conditions:

Foci $(\pm 5, 0)$, the transverse axis is of length 8.

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70. Find the hyperbola satisfying the following conditions:

Foci $(0, \pm 13)$, the conjugate axis is of length 24.

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71. Find the equations of the hyperbola,Foci $\left(\pm 3\sqrt{5}, 0 \right)$, the latus rectum is of length 24 .

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72. Find the equations of the hyperbola,Foci $(\pm 4, 0)$, the latus rectum is of length 12

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73. Find the hyperbola satisfying the following conditions:

Vertices $(\pm 7, 0)$,$e = \frac{4}{3}$.

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74. Find the equations of the hyperbola,Foci $(0, \pm\sqrt{10})$, passing through $(2, 3)$

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75. 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.

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76. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$, where one vertex is at the vertex of the parabola. Find the length of the side of the triangle.

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77. Arun draws a circle with centre at (-1,-2) and radius $\sqrt{5}$. What may be its algebric equation?

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78. Find the equation of conic whose focus is $(-1, 0)$ and fixed line is $4x - 3y + 2 = 0$ and eccentricity $1\sqrt{2}$

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79. A few (circ)les are drawn below. Write their equations with the geometrical conditions given in each figure.

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80. Verify that $x = at^2, y = 2at$ is satisfied by the equation $y^2 = 4ax$

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81. If $P\left(at_1^2, 2at_1\right), Q\left(at_2^2, 2at_2\right)$ are two points on a párabola $y^2 = 4ax$. Find the equation of line through PQ.

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82. If PQ is a focal chord of the parabola.then prove that $t_1 t_2 = -1$.

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83. The circle whose equation is $x^2 + (y-1)^2 = 1$ has the centre.....

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84. Find the equation of the circle whose centre is at $(-3, -2)$ and radius equal to 7.

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85. Find the equation of the circle whose centre is $(-1, 5)$ and which passes through the point $(4, -3)$.

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86. Find the equation of the circle whose area is 154 sq. units and having $2x - 3y + 12 = 0$ and $x + 4y - 5 = 0$ as diameters.

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87. For the ellipse $x^2 + 3y^2 = a^2$, find the length of major and minor axes, foci, vertices and the eccentricity.

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88. 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.

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