



MATHS

BOOKS - MAXIMUM PUBLICATION

CONIC SECTIONS

Example

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

centre $(0,2)$ and radius 2.

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

centre $(-2,3)$ and radius 4.

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

centre $\left(\frac{1}{2}, \frac{1}{4}\right)$ and radius $\frac{1}{12}$.



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

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



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

$$x^2 + y^2 - 8x - 10y - 22 = 0$$



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

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



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7. Find the coordinate of the focus, axis of the parabola, the equation of the directrix and the length of the latus rectum.

$$y^2 = 20x.$$



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8. Find the coordinate of the focus, axis of the parabola, the equation of the directrix and the length of the latus rectum.

$$x^2 = 8y.$$



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9. Find the coordinate of the focus,axis of the parabola, the equation of the directrix and the length of the latus rectum.

$$3x^2 = -15y$$



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10. Find the equation of the parabola satisfying the following condition, focus(6,0), directrix $x = -6$.



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11. Find the equation of the parabola satisfying the following condition, Vertex (0,0), Focus (3,0).



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

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14. Find the coordinate 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.

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

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15. Find the coordinate 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.

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



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16. Find the ellipse satisfying the following conditions:

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



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17.

$F \in$ the ellipse satisfying the following conditions: Ends of the major axis $(\pm 3, 0)$, ends of the minor axis $(0, \pm 2)$.



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18. Find the ellipse satisfying the following conditions:

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



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19. Find the ellipse satisfying the following conditions:

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



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20. 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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21. 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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22. Find the hyperbola satisfying the following conditions:

Vertices $(\pm 2, 0)$, foci $(\pm 3, 0)$.

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23. Find the hyperbola satisfying the following conditions:

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

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24. Find the hyperbola satisfying the following conditions:

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

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25. Find the hyperbola satisfying the following conditions:

Foci $(\pm 3\sqrt{5}, 0)$, the latus rectum is of length 8.

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26. Find the hyperbola satisfying the following conditions:

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

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27. The line $x - 1 = 0$ is the directrix of a parabola, $y^2 = kx$ then

Find the value of k .

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28. The line $x - 1 = 0$ is the directrix of a parabola, $y^2 = kx$ then

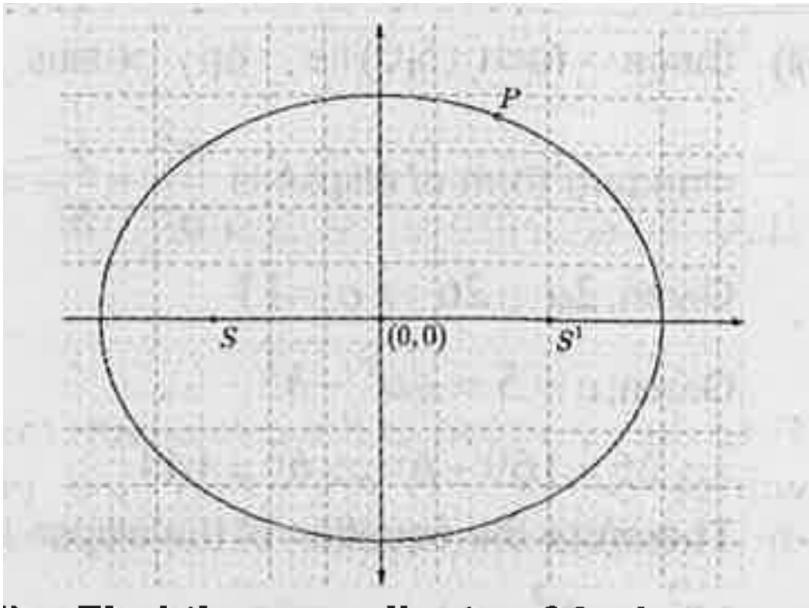
Find the vertex, focus, axis of parabola and length of latus rectum of the

parabola.

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29. In the figure S and S' are foci of the ellipse, $\frac{x^2}{25} + \frac{y^2}{16} = 1$ and P is a viable point on the ellipse.

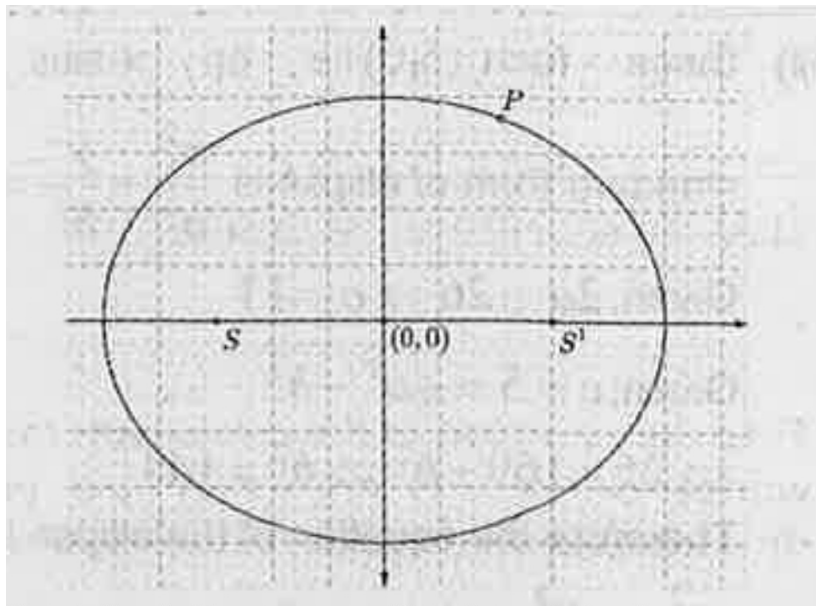
Find the distance between S and S' .



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30. In the figure S and S' are foci of the ellipse, $\frac{x^2}{25} + \frac{y^2}{16} = 1$ and P is a variable point on the ellipse.

What is the maximum area of the triangle PSS' .



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31. 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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32. 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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33. Centre at (0,0), major axis on the y-axis and passes through the points (3,2) and (1,6).

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34. Consider the point A (0,0), B(4,2) and C (8,0)

Find the mid-point of AB.

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35. Consider the point A (0,0), B(4,2) and C (8,0)

Find the equation of the perpendicular bisector of AB.





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36. Consider the point A (0,0), B(4,2) and C (8,0)

Find the equation of the circum circle (Circle passing through the point A, B and C) of triangle ABC.



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37. Find the equation of the Hyperbola where foci $(0, \pm 8)$ are and the length of the latus rectum is 24.



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38. Find the equation of the circle with centre $(-a, -b)$ and radius $\sqrt{a^2 + b^2}$.



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39. 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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40. Consider the parabola $y^2 = 12x$

Find the coordinate of the focus.

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41. Consider the parabola $y^2 = 12x$

Find the length of the latus rectum.

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42. Find the foci, vertices, the eccentricity and the length of the latus rectum of the hyperbola $16x^2 - 9y^2 = 144$.

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43. Directrix of the parabola $x^2 = -4ay$ is.....

A. $x + a = 0$

B. $x - a = 0$

C. $y - a = 0$

D. $y + a = 0$

Answer: C



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



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

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46. Find the foci, vertices, length of the major axis and eccentricity of the ellipse:

$$\frac{x^2}{25} + \frac{y^2}{9} = 1$$

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

Find the equation of the ellipse.

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

Find its eccentricity.

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

The foci.

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

find the eccentricity.

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

Length of latus rectum.

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

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53. Find the eccentricity and the length of latus rectum of the ellipse $4x^2 + y^2 = 36$.

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54. For the hyperbola $9x^2 - 16y^2 = 144$

find eccentricity.



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55. For the hyperbola $9x^2 - 16y^2 = 144$

find the latus rectum.

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56. A hyperbola whose transverse axis is x-axis, centre (0,0) and foci

$(\pm \sqrt{10}, 0)$ passes through the point (3,2)

Find the equation of the hyperbola.

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57. A hyperbola whose transverse axis is x-axis, centre (0,0) and foci

$(\pm \sqrt{10}, 0)$ passes through the point (3,2)

Find the eccentricity.

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58. Find the centre and radius of the circle.

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



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59. Determine the eccentricity and length of latus rectum of the

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



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



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61. Which one of the following equations represents a parabola which is symmetrical about the positive y-axis?

A. $y^2 = 4x$

B. $y^2 = -8x$

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

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

Answer: D



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



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63. Match the following

A	B
Circle	$ax + by + c = 0$
Parabola	$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
Ellipse	$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$
Hyperbola	$(x - h)^2 + (y - k)^2 = 1$
	$y^2 = 4ax$



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64. Find the equation of the parabola satisfying the following condition,
focus(6,0), directrix $x = -6$.



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65. Find the coordinate of the foci, vertices, the length of transverse axis, conjugate axis and eccentricity of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$.



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