



MATHS

BOOKS - A N EXCEL PUBLICATION

CONIC SECTIONS

Question Bank

1. Find the equation of the circle with (a) centre $(0,2)$ and radius 2 (b) centre $(-2,3)$ and radius 4



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



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



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



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

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



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7. Find the centre and radius of the circle.

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



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

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



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9. 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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10. 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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11. 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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12. Find the equation of the circle passing through $(0,0)$ and making intercepts a and b on the co-ordinate axes.



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



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



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15. Consider a circle with centre $(2, -1)$ and which passes through $(3, 6)$ Find the radius of the circle



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16. Consider a circle with centre $(2,-1)$ and which passes through $(3,6)$. Find the equation of the circle



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17. Find the point of intersection of the lines
 $3x - y = 2$ and $x + 2y = 3$



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18. If the lines $3x - y = 2$ and $x + 2y = 3$ are two diameters of a circle and if the circle passes through $(2, 0)$, find the equation of the circle.



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19. If $(-a, -a)$ are the co-ordinates of a point which lies on $x - 2y = 3$, find the value of a



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20. Find, the equation of the circle which touches both the axes and whose centre lies on $x-2y = 3$



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21. Consider a triangle whose sides are along $x+y = 2$, $3x-4y = 6$ and $x-y = 0$

Find the vertices of the triangle



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22. Consider a triangle whose sides are along $x+y = 2$, $3x-4y = 6$ and $x-y = 0$. Prove that the triangle is right angled



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23. Consider a triangle whose sides are along $x+y = 2$, $3x-4y = 6$ and $x-y = 0$. Find the mid point of the hypotenuse and the length of the hypotenuse



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24. Consider a triangle whose sides are along

$$x+y = 2, 3x-4y = 6 \text{ and } x-y = 0$$

Find the equation of the circum circle of the triangle



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25. Consider the points A (4,3), B (8,-3) and C

(0,9). Find the slopes of AB and BC



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26. Consider the points A (4,3), B (8,-3) and C (0,9)

Prove that A, B, C can't lie on a circle



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27. Express the equation $2x^2 + 2y^2 - 3x + 4y - 1 = 0$ in standard form



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28. Find the centre and radius of the circle



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29. Prove that the equations of concentric circles differ only in the constant term



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30. Find the radius and hence the area of the circle $x^2 + y^2 - 6x + 12y + 15 = 0$



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31. Find the equation of the circle concentric with the circle $x^2 + y^2 - 6x + 12y + 15 = 0$ and double of its area



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32. Consider the circle $x^2 + y^2 - 4x - 6y - 3 = 0$. What is the general form of the equation of a circle concentric with the given circle?



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33. Consider the circle

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

Find the radius of the circle



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34. Consider the circle

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

If this circle touches the y axis, find its equation



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



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36. If $(-1,-2)$ and $(5,2)$ are the end points of a diameter of a circle, find its centre and radius



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37. Can you write the equation of circle by using two different methods?



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38. Write the slopes of the lines $2x+3y-9=0$ and $4x+6y+19=0$. What do you observe?



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39. Find the distance between them.





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40. If they are the tangents of a circle, write the radius of the circle



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41. Find the centre of the circle

$$x^2 + y^2 - 5x + 2y - 48 = 0$$



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42. Prove that $(5,6)$ lies on the circle

$$x^2 + y^2 - 5x + 2y - 48 = 0$$



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43. Find the equation of this normal



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44. Complete the following table



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45. Find the equation of the circle passing through $(1,0)$, $(2,-7)$ and $(8,1)$. Hence prove that $(1,0)$, $(2,-7)$, $(8,1)$ and $(9,-6)$ are concyclic



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46. For the following parabolas find the co-ordinates of the focus, equation to the directrix, equation to the axis, co-ordinates of the vertex and length of latus rectum. $y^2 = 6x$



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47. For the following parabolas find the co-ordinates of the focus, equation to the directrix, equation to the axis, co-ordinates of the vertex and length of latus rectum.

$$2y^2 = -8x$$



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48. For the following parabolas find the co-ordinates of the focus, equation to the

directrix, equation to the axis, co-ordinates of the vertex and length of latus rectum. $x^2 = 4y$



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49. For the following parabolas find the co-ordinates of the focus, equation to the directrix, equation to the axis, co-ordinates of the vertex and length of latus rectum.

$$16x^2 = -25y$$



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50. Find the equation of the parabola if the vertex is at the origin and the focus is $(1,0)$



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51. Find the equation of the parabola if the vertex is at the origin and the focus is $(0,-4)$



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52. In each of the following cases, find the coordinates of the focus, axis of the parabola, the equations of the directrix and the length of the latus rectum $y^2 = 12x$



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53. In each of the following cases, find the coordinates of the focus, axis of the parabola, the equations of the directrix and the length of the latus rectum $x^2 = 6y$





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54. In each of the following cases, find the coordinates of the focus, axis of the parabola, the equations of the directrix and the length of the latus rectum $y^2 = -8x$



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55. In each of the following cases, find the coordinates of the focus, equation of axis of the parabola, the equations of the directrix and

the length of the latus rectum

$$x^2 = -16y$$



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56. In each of the following cases, find the coordinates of the focus, axis of the parabola, the equations of the directrix and the length of the latus rectum

$$y^2 = 10x$$



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57. In each of the following cases, find the coordinates of the focus, axis of the parabola, the equations of the directrix and the length of the latus rectum

$$x^2 = -9y$$



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

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



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



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



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61. Find the equation of the parabola whose vertex is $(0,0)$ and focus is $(-2,0)$



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