MATHS

BOOKS - PATHFINDER MATHS (BENGALI ENGLISH)

CONIC SECTION

Question Bank

1. Find the equation of the circle whose centre is the points (2,-3) and radius 5 units.

2. Find the equation of the circle which has A(1,3) and B(4,5) as the opposite ends of a diameter.

3. The parabola $y^2 = 4ax$ passes through the point (2,-6). Find the length of the latus rectum.

4. Find whether (4,-2) is on the exterior, interior or on the circle whose centre is (-3,1) and radius $\sqrt{5}$.

5. Do the points (-2,5),(3,-4) lie on the same or opposite sides of the circle $3x^2 + 3y^2 - 5x - 93 = 0$?

6. One end of a diameter of the circle $x^2 + y^2 - 3x + 5y - 4 = 0$ is (2,1). Find the coordinates of the other end.

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7. Find the focus, directrix and eccentricity of the parabola $y^2 = 2\sqrt{3}x$.

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8. In each of the following find the coordinates of the focus , axis of the parabola , the equation of the directrix and the length of the latus rectum.

$$x^2 = -16y$$

9. Find the locus of the point P, sum of whose distance from the points $F_1(2, 0)$ and $F_2(-2, 0)$ is constant and equal to 6.

10. In each of the 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.

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

11. Find the equation of the ellipse with $e = \dfrac{3}{4}$, foci on y-axis, centre at the origin and

passing through (6,4).

12. A rod PQ of length 16 units moves with its ends P and Q always touching x-axis and y-axis respectively. Determine the equation of the locus of a point K on PQ which is always at a distance of 4 unit from P.

13. Find the locus of the point P, sum of whose distances from the points $F_1(- 2, 1)$ and $F_2(- 5, 5)$ is a constant equal to 5.

14. Find the equation of a parabola whose focus is (1,2) and directrix is the line x+y=0.

15. Find the equation of an ellipse with eccentricity $\dfrac{1}{2}$, focus F(1,1) and the line $x - y + 3 = 0$ as directrix.

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

17. A man running on a race course notes that the sum of his distances from the two flag posts is always 10 m and the distance between the flag posts is 8 m. Find the equation of the path traced by the man.

18. An arch is in the from of a semi - ellipse. It is 8 m wide and 2 m high at the centre. Find

the height of the arch at a point 1.5 m from one end.

19. A parabolic reflector is 40 cm in diameter and 10 cm deep. Find the position of the focus of the reflector.

20. Find the equation of a circle which passes through the origin and makes intercepts of 2 units and 4 units on x-axis and y-axis respectively.

21. Find the equation to the circle which passes through the point (2,-2),(3,4) and has its centre on the line 2x+2y=7. Find the centre and radius.

22. Find the equation of a circle concentric with the circle $2x^2 + 2y^2 - 6x + 8y + 1 = 0$ and of double its area.

23. Find the points of intersection (if any) of the line x+2y-5=0 and the circle `x^2+y^2=25. In case the line cuts the circle, find the length of the chord intercepted.

24. Find the length of the chord intercepted by the circle $x^2 + y^2 - 6x + 8y - 5 = 0$ on the line 2x-y=5.

25. Find the equations of circles which touch the axes and whose centres lie on the line x-2y=3