

Guess Paper – 2014
Class – XI
Subject – Mathematics

ASSIGNMENT ON CONIC SECTION

1. Find the area of the circle whose centre is at (1, 2) and which passes through the point (4, 6) .
2. Find the equation of the circle which touches both the axes and whose radius is a .
3. Find the centres of the circles $x^2 + y^2 = 1$, $x^2 + y^2 + 6x - 2y = 1$ and $x^2 + y^2 - 12x + 4y = 1$.Check whether the centres are collinear or not.
4. The lines $2x - 3y = 5$ and $3x - 4y = 7$ are the diameters of a circle of area 154 square units .Find the equation of the circle.
5. Find the equation of the circle which touches x -axis and whose centre is (1, 2).
6. If the radius of the circle $x^2 + y^2 - 18x + 12y + k = 0$ be 11, then Find k .
7. ABC is a triangle in which angle C is a right angle. If the coordinates of A and B be $(-3, 4)$ and $(3, -4)$ respectively, then Find the equation of the circumcircle of triangle ABC .
8. If the vertices of a triangle be $(2, -2)$, $(-1, -1)$ and $(5, 2)$, then Find the equation of its circumcircle.
9. Find the equation of the circle passing through the origin and cutting intercepts of length 3 and 4 units from the positive axes.
10. Find the equation of the circle having centre $(1, -2)$ and passing through the point of intersection of lines $3x + y = 14$.
11. Find the equation of the circle concentric with the circle $x^2 + y^2 + 8x + 10y - 7 = 0$ and passing through the centre of the circle $x^2 + y^2 - 4x - 6y = 0$.
12. A circle is concentric with the circle $x^2 + y^2 - 6x + 12y + 15 = 0$ and has area double of its area. The Find the equation of the circle.
13. Find the centre and radius of the circle $2x^2 + 2y^2 - x = 0$.
14. Find the equation of the circle touching $x = 0, y = 0$ and $x = 4$.
15. Find the equation of a circle whose centre is origin and radius is equal to the distance between the lines $x = 1$ and $x = -1$.
16. Find the equation of the circle concentric with the circle $x^2 + y^2 - 4x - 6y - 3 = 0$ and touching y -axis.
17. Find the area of a circle whose centre is (h, k) and radius a .
18. Find the equation of circle whose diameter is the line joining the points $(-4, 3)$ and $(12, -1)$.
19. Find the equation of the circle which passes through the points $(3, -2)$ and $(-2, 0)$ and centre lies on the line $2x - y = 3$.
20. Find the area of the circle in which a chord of length $\sqrt{2}$ makes an angle $\frac{\pi}{2}$ at the centre.

21. If $(x, 3)$ and $(3, 5)$ are the extremities of a diameter of a circle with centre at $(2, y)$, then Find the the value of x and y .
22. Find the equation of the circle in the first quadrant which touches each axis at a distance 5 from the origin .
23. Find the equation of the circle which passes through $(1, 0)$ and $(0, 1)$ and has its radius as small as possible.
24. Find the equation of the circumcircle of the triangle formed by the lines $x = 0, y = 0, 2x + 3y = 5$.
25. Find the equation of the circle whose diameter lies on $2x + 3y = 3$ and $16x - y = 4$ which passes through $(4, 6)$.
26. Find the area of the curve $x^2 + y^2 = 2ax$.
27. The centre of a circle is $(2, -3)$ and the circumference is 10π . Then Find the equation of the circle.
28. For what value of k , the points $(0, 0), (1, 3), (2, 4)$ and $(k, 3)$ are con-cyclic.
29. For what value of k , the points $(2k, 3k), (1, 0), (0, 1)$ and $(0, 0)$ lie on a circle.
30. Check weather the point $(1, 1)$ lies inside, outside or on the circle $x^2 + y^2 - x + y - 1 = 0$.
31. Find the equation of the circle with origin as centre passing the vertices of an equilateral triangle whose median is of length $3a$.
32. A circle is inscribed in an equilateral triangle of side a , Find the area of any square inscribed in the circle.

PARABOLA

1. If the vertex of a parabola be at origin and directrix be $x + 5 = 0$, then find its latus rectum.
2. If $(2, 0)$ is the vertex and y -axis the directrix of a parabola, then find its focus.
3. If the parabola $y^2 = 4ax$ passes through $(-3, 2)$, then find length of its latus rectum.
4. Find the ends of latus rectum of parabola $x^2 + 8y = 0$.
5. Find the equation of the lines joining the vertex of the parabola $y^2 = 6x$ to the points on it whose abscissa is 24.
6. Find the points on the parabola $y^2 = 36x$ whose ordinate is three times the abscissa.
7. Find the co-ordinates of the extremities of the latus rectum of the parabola $5y^2 = 4x$.
8. A parabola passing through the point $(-4, -2)$ has its vertex at the origin and y -axis as its axis. Find the latus rectum of the parabola.
9. Find the focus of the parabola $x^2 = -16y$.

10. Find whether the parabola $y^2 = x$ is symmetric about x-axis or y-axis.
11. Find the Focus and directrix of the parabola $x^2 = -8ay$.
12. Find the area of triangle formed inside the parabola $y^2 = 4x$ and whose ordinates of vertices are 1, 2 and 4.
13. An equilateral triangle is inscribed in the parabola $y^2 = 4ax$ whose vertices are at the parabola, then Find the length of its side.
14. 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.

Ellipse

15. If the latus rectum of an ellipse be equal to half of its minor axis, then find its eccentricity.
16. Find the equation of the ellipse whose centre is at origin and which passes through the points $(-3, 1)$ and $(2, -2)$.
17. If the eccentricity of an ellipse be $5/8$ and the distance between its foci be 10, then find its latus rectum.
18. The eccentricity of an ellipse is $2/3$, latus rectum is 5 and centre is $(0, 0)$. Find the equation of the ellipse.
19. The latus rectum of an ellipse is 10 and the minor axis is equal to the distance between the foci. Find the equation of the ellipse.
20. An ellipse passes through the point $(-3, 1)$ and its eccentricity is $\sqrt{\frac{2}{5}}$. Find the equation of the ellipse.
21. If the distance between the foci of an ellipse be equal to its minor axis, then find its eccentricity.
22. The lengths of major and minor axis of an ellipse are 10 and 8 respectively and its major axis along the y-axis. Find the equation of the ellipse referred to its centre as origin.
23. Find the distance between the foci of the ellipse $3x^2 + 4y^2 = 48$.
24. Find the equation of the ellipse whose vertices are $(\pm 5, 0)$ and foci are $(\pm 4, 0)$.
25. The centre, one of the foci and semi-major axis of an ellipse be $(0, 0)$, $(0, 3)$ and 5 then find its equation.
26. Find the eccentricity of the ellipse whose latus rectum is equal to the distance between two focus points.

27. For the ellipse $3x^2 + 4y^2 = 12$, Find the length of latus rectum.
28. Find the length of the latus rectum of the ellipse $\frac{x^2}{36} + \frac{y^2}{49} = 1$.
29. For the ellipse $\frac{x^2}{64} + \frac{y^2}{28} = 1$, Find the eccentricity.
30. Find the equation of the ellipse whose one focus is at $(4, 0)$ and whose eccentricity is $4/5$.
31. Find the eccentricity of the ellipse $9x^2 + 25y^2 = 225$.
32. The equation $\frac{x^2}{2-r} + \frac{y^2}{r-5} + 1 = 0$ represents an ellipse then find r .
33. If $P \equiv (x, y)$, $F_1 \equiv (3, 0)$, $F_2 \equiv (-3, 0)$ and $16x^2 + 25y^2 = 400$, then find $PF_1 + PF_2$.
34. If the eccentricity of the two ellipse $\frac{x^2}{169} + \frac{y^2}{25} = 1$ and $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ are equal, then find value of a/b .
- Hyperbola**
35. If the eccentricities of the hyperbolas $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ and $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$ be e and e_1 , then find $\frac{1}{e^2} + \frac{1}{e_1^2}$. (2)
36. If P is a point on the hyperbola $16x^2 - 9y^2 = 144$ whose foci are S_1 and S_2 , then Find $PS_1 \sim PS_2$.
37. If the latus rectum of an hyperbola be 8 and eccentricity be $3/\sqrt{5}$, then Find the equation of the hyperbola.
38. Find the eccentricity of a hyperbola passing through the points $(3, 0)$, $(3\sqrt{2}, 2)$.
39. The length of the transverse axis of a hyperbola is 7 and it passes through the point $(5, -2)$. The Find the equation of the hyperbola.
40. If $(4, 0)$ and $(-4, 0)$ be the vertices and $(6, 0)$ and $(-6, 0)$ be the foci of a hyperbola, then Find its eccentricity.
41. Find the eccentricity of the hyperbola $x^2 - y^2 = 25$.
42. If $(0, \pm 4)$ and $(0, \pm 2)$ be the foci and vertices of a hyperbola, then Find its equation.

43. Find the eccentricity of the conic
 $x^2 - 4y^2 = 1$.
44. The distance between the foci of a hyperbola is double the distance between its vertices and the length of its conjugate axis is 6. Find the equation of the hyperbola referred to its axes as axes of co-ordinates.

Compiled By:

Sumit luthra, Pgt math, Mount Caremel school, N.D 76

Ph: 9891985899, sumit.luthra1981@gmail.com. For solution mail me.

SUMIT LUTHRA