RAVI MATHS TUITION CENTER PH - 8056206308

Two Dimensional Analytical Geometry-II - 1 MARK

Date : 19-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 00:50:00 Hrs

Total Marks : 50

50 x 1 = 50

1) The equation of the circle passing through(1,5) and (4,1) and touching y -axis is $x^2+y^2-5x-6y+9+(4x+3y-19)=0$ whereλ is equal to

(a) $0, -\frac{40}{9}$ (b) 0 (c) $\frac{40}{9}$ (d) $\frac{-40}{9}$

2) The eccentricity of the hyperbola whose latus rectum is 8 and conjugate axis is equal to half the distance between the foci is

(a) $\frac{4}{3}$ (b) $\frac{4}{\sqrt{3}}$ (c) $\frac{2}{\sqrt{3}}$ (d) $\frac{3}{2}$

3) The circle $x^2+y^2=4x+8y+5$intersects the line$3x-4y=m$ at two distinct points if

(a) 15< m < 65 (b) 35< m < 85 (c) −85< m < −35 (d) −35< m < 15

4) The length of the diameter of the circle which touches the x -axis at the point (1,0) and passes through the point (2,3) .

(a) $\frac{6}{5}$ (b) $\frac{5}{3}$ (c) $\frac{10}{5}$ (d) $\frac{3}{5}$

5) The radius of the circle$3x^2+by^2+4bx-6by+b^2=0$ is

(a) 1 (b) 3 (c) $\sqrt{10}$ (d) $\sqrt{11}$

6) The centre of the circle inscribed in a square formed by the lines $x^2-8x-12=0$ and $y^2-14y+45=0$ is

(a) (4,7) (b) (7,4) (c) (9,4) (d) (4,9)

7) The equation of the normal to the circle $x^2+y^2-2x-2y+1=0$ which is parallel to the line $2x+4y=3$ is

(a) x+2y=3 (b) x+2y+3= 0 (c) 2x+4y+3=0 (d) x−2y+3= 0

8) If P(x, y) be any point on $16x^2+25y^2=400$ with foci F1 (3,0) and F2 (-3,0) then PF_1 PF_2 + is

(a) 8 (b) 6 (c) 10 (d) 12

9) The radius of the circle passing through the point(6,2) two of whose diameter arex+y=6 and x+2y=4 is

(a) 10 (b) $2\sqrt{5}$ (c) 6 (d) 4

10) The area of quadrilateral formed with foci of the hyperbolas $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and $\frac{x^2}{a^2}-\frac{y^2}{b^2}=-1$

(a) $4(a^2+b^2)$ (b) $2(a^2+b^2)$ (c) a^2+b^2 (d) $\frac{1}{2}(a^2+b^2)$

11) If the normals of the parabola $y^2 = 4x$ drawn at the end points of its latus rectum are tangents to the circle $(x-3)^2+(y+2)^2=r^2$, then the value of r^2 is

(a) 2 (b) 3 (c) 1 (d) 4

12) If x+y=k is a normal to the parabola $y^2=12x$, then the value of k is

(a) 3 (b) -1 (c) 1 (d) 9

13) The ellipse E1 $\frac{x^2}{9}+\frac{y^2}{4}=1$ is inscribed in a rectangle R whose sides are parallel to the coordinate axes. Another ellipse E2 passing through the point(0,4) circumscribes the rectangle R . The eccentricity of the ellipse is

(a) $\frac{\sqrt{2}}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

14) Tangents are drawn to the hyperbola $\frac{x^2}{9} + \frac{y^2}{4} = 1$ 1parallel to the straight line2x−y=1. One of the points of contact of tangents on the hyperbola is

(a) $\frac{9}{2\sqrt{2}}, \frac{-1}{\sqrt{2}}$ (b) $\frac{-9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (c) $\frac{9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (d) $\left(3\sqrt{3}, -2\sqrt{2}\right)$

15) The equation of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ 1having centre at (0,3) is

(a) $x^2+y^2-6y-7=0$ (b) $x^2+y^2-6y+7=0$ (c) $x^2+y^2-6y-5=0$ (d) $x^2+y^2-6y+5=0$

16) Let C be the circle with centre at(1,1) and radius =1. If T is the circle centered at(0, y) passing through the origin and touching the circleC externally, then the radius of T is equal to

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}}{\sqrt{2}}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

17) Consider an ellipse whose centre is of the origin and its major axis is along x-axis. If its eccentrcity is $\frac{3}{5}$ and the distance between its foci is 6, then the area of the quadrilateral inscribed in the ellipse with diagonals as major and minor axis of the ellipse is

(a) 8 (b) 32 (c) 80 (d) 40

18) Area of the greatest rectangle inscribed in the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$ is

(a) 2ab (b) ab (c) $\sqrt{ab}$ (d) $\frac{a}{b}$

19) An ellipse hasOB as semi minor axes, F and F′ its foci and the angle FBF′ is a right angle. Then the eccentricity of the ellipse is

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{1}{\sqrt{3}}$

20) The eccentricity of the ellipse $(x-3)^2 + (y-4)^2 = \frac{y^2}{9}$ is

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{3\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$

21) If the two tangents drawn from a point P to the parabola$y2 = 4x$are at right angles then the locus of P is

(a) 2x+1=0 (b) x = −1 (c) 2x−1=0 (d) x =1

22) The circle passing through(1,-2) and touching the axis of x at (3,0) passing through the point

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

23) The locus of a point whose distance from (-2,0) is $\frac{2}{3}$ times its distance from the line x = $\frac{-9}{2}$ is

(a) a parabola (b) a hyperbola (c) an ellipse (d) a circle

24) The values of m for which the line y=mx+ $2\sqrt{5}$ touches the hyperbola $16x^2-9y^2=144$ are the roots of $x^2-(a+b)x-4=0$, then the value of (a+b) is

(a) 2 (b) 4 (c) 0 (d) -2

25) If the coordinates at one end of a diameter of the circle $x^2+y^2-8x-4y+c = 0$ are (11,2) , the coordinates of the other end are

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

26) If (0, 4) and (0, 2) are the vertex and focus of a parabola then its equation is

(a) $x^2 + 8y = 32$ (b) $y^2 + 8x = 32$ (c) $x^2 - 8y = 32$ (d) $y^2 - 8x = 32$

27) The equation of the directrix of the parabola $y^2 + 4y + 4x + 2 = 0$ is

(a) x = -1 (b) x = 1 (c) x = $\frac{-3}{2}$ (d) x = $\frac{3}{2}$

28) Equation of tangent at (-4, -4) on $x^2 = -4y$ is

(a) 2x - y + 4 = 0 (b) 2x + y - 4 = 0 (c) 2x - y - 12 = 0 (d) 2x + y + 4 = 0

29) y^2 - 2x - 2y + 5 = 0 is a

(a) circle (b) parabola (c) ellipse (d) hyperbola

30) If a parabolic reflector is 20 em in diameter and 5 em deep, then its focus is

(a) (0,5) (b) (5,0) (c) (10,0) (d) (0, 10)

31) The eccentricity of the ellipse $9x^2$+ $5y^2$ - 30y= 0 is

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{4}$ (d) none of these

32) The length of the latus rectum of the ellipse $\frac{x^2}{36} + \frac{y^2}{49}$ = 1 is

(a) $\frac{98}{6}$ (b) $\frac{72}{7}$ (c) $\frac{72}{14}$ (d) $\frac{98}{12}$

33) If the distance between the foci is 2 and the distance between the direction is 5, then the equation of the ellipse is

(a) $6x^2 + 10y^2 = 5$ (b) $6x^2 + 10y^2 = 15$ (c) $x^2 + 3y^2 = 10$ (d) none

34) In an ellipse, the distance between its foci is 6 and its minor axis is 8, then e is

(a) $\frac{4}{5}$ (b) $\frac{1}{\sqrt{52}}$ (c) $\frac{3}{5}$ (d) $\frac{1}{2}$

35) The equation $7x^2 - 6\sqrt{3}$ xy + $13y^2$ - $4\sqrt{3}$ x - 4y - 12 = 0 represents

(a) parabola (b) ellipse (c) hyperbola (d) rectangular hyperbola

36) If the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{b^2}$ = 1 and the hyperbola $\frac{x^2}{144} - \frac{y^2}{81} = \frac{1}{25}$ coincide then b^2 is

(a) 1 (b) 5 (c) 7 (d) 9

37) The director circle of the ellipse $\frac{x^2}{9} - \frac{y^2}{5} = 1$ is

(a) $x^2 + y^2 = 4$ (b) $x^2 + y^2 = 9$ (c) $x^2 + y^2 = 45$ (d) $x^2 + y^2 = 14$

38) The auxiliary circle of the ellipse $\frac{x^2}{25} + \frac{y^2}{16}$ = 1 is

(a) $x^2 + y^2 = 25$ (b) $x^2 + y^2 = 16$ (c) $x^2 + y^2 = 41$ (d) $x^2 + y^2 = 5$

39) If (1, -3) is the centre of the circle $x^2 + y^2$ + ax + by + 9 = 0 its radius is

(a) $\sqrt{10}$ (b) 1 (c) 5 (d) $\sqrt{19}$

40) The area of the circle $(x - 2)^2 + (y - k)^2 = 25$ is

(a) 25π (b) 5π (c) 10π (d) 25

41) The equation of tangent at (1, 2) to the circle $x^2 + y^2 = 5$ is

(a) x+y=3 (b) x + 2y = 3 (c) x- y= 5 (d) x - 2y = 5

42) The line y = mx +1 is a tangent to the parabola $y^2 = 4x$ if m = _____

(a) 1 (b) 2 (c) 3 (d) 4

43) The angle between the tangents drawn from (1, 4) to the parabola $y^2 = 4x$ is _____

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{5}$ (d) $\frac{\pi}{5}$

44) In an ellipse $5x^2 + 7y^2 = 11$, the point (4, -3) lies _____ the ellipse

(a) on (b) outside (c) inside (d) none

45) The number of normals to the hyperbola $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ = 1 from an external point is

(a) 2 (b) 4 (c) 6 (d) 5

46) The length of major and minor axes of $4x^2 + 3y^2 = 12$ are _____

(a) $4, 2\sqrt{3}$ (b) $2, \sqrt{3}$ (c) $2\sqrt{3}, 4$ (d) $\sqrt{3}, 2$

47) The tangent at any point P on the ellipse $\frac{x^2}{6} + \frac{y^2}{3}$ = 1 whose centre C meets the major axis at T and PN is the perpendicular to the major axis; The CN CT = _____

(a) $\sqrt{6}$ (b) 3 (c) $\sqrt{3}$ (d) 6

48) If t_1 and t_2 are the extremities of any focal chord of $y^2 = 4ax$ then t_1t_2 is _____

(a) -1 (b) 0 (c) ±1 (d) $\frac{1}{2}$

49) The locus of the foot of perpendicular from the focus on any tangent to $y^2 = 4ax$ is

(a) $x^2 + y^2 = a^2 - b^2$ (b) $x^2 + y^2 = a^2$ (c) $x^2 + y^2 = a^2 - b^2$ (d) $x = 0$

50) The locus of the point of intersection of perpendicular tangents of the parabola $y^2 = 4ax$ is

(a) latus rectum (b) directrix (c) tangent at the vertex (d) axis of the parabola

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RAVI MATHS TUITION CENTER PH - 8056206308

Two Dimensional Analytical Geometry-II 2 MARKS

Date : 19-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 00:50:00 Hrs

Total Marks : 50

25 x 2 = 50

1) Obtain the equation of the circles with radius 5 cm and touching x-axis at the origin in general form.
2) Find the equation of the circle with centre (2,-1) and passing through the point (3,6) in standard form.
3) Find the equation of circles that touch both the axes and pass through (-4,-2) in general form.
4) Find the equation of the circle with centre (2,3) and passing through the intersection of the lines $3x-2y-1=0$and $4x+y-27=0$.
5) A circle of area 9p square units has two of its diameters along the lines $x+y=5$ and $x-y=1$. Find the equation of the circle.
6) If$y=2+c$ is a tangent to the circle$x^2+y^2=16$, find the value of c .
7) Find the equation of the tangent and normal to the circle $x^2+y^2-6x+6y-8=0$ at (2,2) .
8) If the equation$3x^2+(3-p)xy+qy^2-2px=8pq$ represents a circle, find p and q . Also determine the centre and radius of the circle
9) Find the vertex, focus, equation of directrix and length of the latus rectum of the following: $y^2=16x$
10) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following: $\frac{x^2}{25}+\frac{y^2}{9}=1$
11) Prove that the length of the latus rectum of the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ is $\frac{2b^2}{a}$.
12) Show that the absolute value of difference of the focal distances of any point P on the hyperbola is the length of its transverse axis.
13) Find the equations of the two tangents that can be drawn from (5,2) to the ellipse $2x^2+7y^2=14$.
14) Find the equations of tangents to the hyperbola$\frac{x^2}{16}-\frac{y^2}{64}=1$which are parallel to$10x-3y+9=0$.
15) Show that the line$x-y+4=0$ is a tangent to the ellipse $x^2+3y^2=12$. Also find the coordinates of the point of contact.
16) Find the equation of the tangent to the parabola $y^2=16x$perpendicular to $2x+2y+3=0$.
17) Find the equation of the tangent at t = 2 to the parabola$y^2=8x$. (Hint: use parametric form)
18) Prove that the point of intersection of the tangents at ' t_1 ' and ' t_2 'on the parabola $y^2=4ax$ is $\left[at_1t_2, a(t_1+t_2)\right]$.
19) At a water fountain, water attains a maximum height of 4m at horizontal distance of 0 5 . m from its origin. If the path of water is a parabola, find the height of water at a horizontal distance of 0.75m from the point of origin.
20) A rod of length 1 2 . m moves with its ends always touching the coordinate axes. The locus of a point P on the rod, which is 0 3 . m from the end in contact with x -axis is an ellipse. Find the eccentricity.
21) Points A and B are 10km apart and it is determined from the sound of an explosion heard at those points at different times that the location of the explosion is 6 km closer to A than B . Show that the location of the explosion is restricted to a particular curve and find an equation of it.

22) Find centre and radius of the following circles.

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

23) Find the vertex, focus, equation of directrix and length of the latus rectum of the following:

$x^2 = 24y$

24) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following:

$\frac{x^2}{3} + \frac{y^2}{10} = 1$

25) Find the equation of the hyperbola whose vertices are $(0, \pm 7)$ and $e = \frac{4}{3}$

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RAVI MATHS TUITION CENTER PH - 8056206308

Two Dimensional Analytical Geometry-II 3 MARKS

Date : 19-Jul-19

12th Standard 2019 EM

Maths

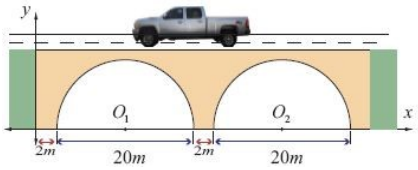
Reg.No. : | | | | | | |

Time : 01:15:00 Hrs

Total Marks : 75

25 x 3 = 75

1) Find the general equation of a circle with centre(-3,-4) and radius 3 units.
2) Find the equation of the circle described on the chord $3x+y+5=0$ of the circle $x^2+y^2=16$ as diameter.
3) Determine whether $x+y-1=0$ is the equation of a diameter of the circle $x^2+y^2-6x+4y+c=0$ for all possible values of c .
4) Find the general equation of the circle whose diameter is the line segment joining the points $(-4,-2)$and $(1,1)$.
5) Examine the position of the point (2,3) with respect to the circle $x^2+y^2-6x-8y+12=0$.
6) The line $3x+4y-12=0$ meets the coordinate axes at A and B . Find the equation of the circle drawn on AB as diameter.
7) A line $3x+4y+10=0$ cuts a chord of length 6 units on a circle with centre of the circle (2,1) . Find the equation of the circle in general form.
8) A circle of radius 3 units touches both the axes. Find the equations of all possible circles formed in the general form.
9) Find the centre and radius of the circle$3x^2+(a+1)y^2+6x-9y+a+4=0$.
10) Find the equation of the circle passing through the points(1,1), (2,-1) , and(3,2) .
11) Find the equations of the tangent and normal to the circle $x^2+y^2=25$ at P(-3,4).
12) If $y=4x+c$ is a tangent to the circle $x^2+y^2=9$, find c .
13) A road bridge over an irrigation canal have two semi circular vents each with a span of 20m and the supporting pillars of width 2m. Use Fig.5.16 to write the equations that model the arches.



14) A semielliptical archway over a one-way road has a height of 3m and a width of 12m. The truck has a width of 3m and a height of 2.7m. Will the truck clear the opening of the archway?
15) The maximum and minimum distances of the Earth from the Sun respectively are 152×106 km and 94.5×106 km. The Sun is at one focus of the elliptical orbit. Find the distance from the Sun to the other focus.
16) A concrete bridge is designed as a parabolic arch. The road over bridge is 40m long and the maximum height of the arch is 15m. Write the equation of the parabolic arch.
17) The parabolic communication antenna has a focus at 2m distance from the vertex of the antenna. Find the width of the antenna 3m from the vertex.
18) An equation of the elliptical part of an optical lens system is $\frac{x^2}{16}+\frac{y^2}{9}=1$. The parabolic part of the system has a focus in common with the right focus of the ellipse .The vertex of the parabola is at the origin and the parabola opens to the right. Determine the equation of the parabola.
19)

A room 34m long is constructed to be a whispering gallery. The room has an elliptical ceiling, as shown in Fig. 5.64. If the maximum height of the ceiling is 8m, determine where the foci are located.

20) Two coast guard stations are located 600 km apart at points A(0,0) and B(0,600) . A distress signal from a ship at P is received at slightly different times by two stations. It is determined that the ship is 200 km farther from station A than it is from station B . Determine the equation of hyperbola that passes through the location of the ship.

21) Find the circumference and area of the circle $x^2 + y^2 - 2x + 5y + 7 = 0$

22) Find the value of p so that $3x + 4y - p = 0$ is a tangent to the circle $x^2 + y^2 - 64 = 0$.

23) Find the equatlon of the ellipse whose e = $\frac{3}{4}$, foci ony-axl ,centre at origin and passing through (6,4).

24) For the hyperbola $3x^2 - 6y^2 = -18$, find the length of transverse and conjugate axes and eccentricity.

25) Find the value of c if $y = x + c$ is a tangent to the hyperbola $9x^2 - 16y^2 = 144$.

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RAVI MATHS TUITION CENTER, NEAR VILLIVAKKAM RLY STATION, CHENNAI – 82.
WHATSAPP - 8056206308

Two Dimensional Analytical Geometry-II

12th Standard

Maths

Exam Time : 01:30:00 Hrs | Total Marks : 75

25 x 3 = 75

1) A line 3x+4y+10 = 0 cuts a chord of length 6 units on a circle with centre of the circle (2,1) . Find the equation of the circle in general form.
2) Find the centre and radius of the circle$3x^2+(a+1)y^2+6x-9y+a+4=0$.
3) Find the equation of circles that touch both the axes and pass through (-4,-2) in general form.
4) A circle of area 9π square units has two of its diameters along the lines x+y=5 and x−y=1.
   Find the equation of the circle.
5) Determine whether the points(-2,1),(0,0) and (-4,-3) lie outside, on or inside the circle $x^2+y^2-5x+2y-5=0$.
6) Find the length of Latus rectum of the parabola $y^2 = 4ax$.
7) Find the equation of the parabola whose vertex is (5,-2) and focus(2,-2) .
8) Find the equation of the hyperbola with vertices (0,±4) and foci(0,±6).
9) Find the equation of the hyperbola in each of the cases given below:
   (i) foci(±2,0), eccentricity = $\frac{3}{2}$
   (ii) Centre (2,1) , one of the foci (8,1) and corresponding directrix x = 4.
   (iii) passing through(5,−2)and length of the transverse axis along x axis and of length 8 units.
10) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following :
   $\frac{(x-3)^2}{225}+\frac{(y-4)^2}{289}=1$
11) Find the equations of tangent and normal to the ellipse $x^2+4y^2=32$ when $\theta=\frac{\pi}{4}$
12) Find the equation of the tangent at t = 2 to the parabola$y^2 = 8x$. (Hint: use parametric form)
13) If the normal at the point ' t_1 ' on the parabola $y^2 = 4ax$ meets the parabola again at the point' t_2 ', then prove that $t_2=-\left(t_1+\frac{2}{t_1}\right)$

14) A semielliptical archway over a one-way road has a height of 3m and a width of 12m. The truck has a width of 3m and a height of 2.7m. Will the truck clear the opening of the archway?
15) The equation $y=\frac{1}{32}x^2$ models cross sections of parabolic mirrors that are used for solar energy. There is a heating tube located at the focus of each parabola; how high is this tube located above the vertex of the parabola?
16) An equation of the elliptical part of an optical lens system is $\frac{x^2}{16}+\frac{y^2}{9}$ =1. The parabolic part of the system has a focus in common with the right focus of the ellipse .The vertex of the parabola is at the origin and the parabola opens to the right. Determine the equation of the parabola.

17) A room 34m long is constructed to be a whispering gallery. The room has an elliptical ceiling, as shown in Fig. 5.64. If the maximum height of the ceiling is 8m, determine where the foci are located.

18) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following:

$\frac{x^2}{3} + \frac{y^2}{10} = 1$

19) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following:

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

20) Find the circumference and area of the circle $x^2 + y^2 - 2x + 5y + 7 = 0$

21) Find the value of p so that $3x + 4y - p = 0$ is a tangent to the circle $x^2 + y^2 - 64 = 0$.

22) Find the equation of the ellipse whose latus rectum is 5 and e= $\frac{2}{3}$

23) Find the equation of the hyperbola whose conjugate axis is 5 and the distance between the foci is 13.

24) Show that the line x + y + 1 = 0 touches the hyperbola $\frac{x^2}{16} - \frac{y^2}{15} = 1$ and find the co-ordinates of the point of contact

25) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following :

$\frac{(y-2)^2}{25} \frac{(x+1)^2}{16} = 1$

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RAVI MATHS TUITION CENTER PH - 8056206308

Two Dimensional Analytical Geometry-II 5 MARKS

Date : 19-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 01:30:00 Hrs

Total Marks : 70

14 x 5 = 70

1) Find the equation of the parabola with focus $\left(-\sqrt{2}, 0\right)$ and directrix x=2$\sqrt{2}$.

2) Find the equation of the parabola whose vertex is (5,-2) and focus(2,-2) .

3) Find the equation of the parabola with vertex (-1,-2) , axis parallel to y -axis and passing through (3,6)

4) Find the vertex, focus, directrix, and length of the latus rectum of the parabola $x^2-4x-5y-1=0$.

5) Find the equation of the ellipse with foci (±2,0) , vertices (±3,0) .

6) Find the equation of the ellipse whose eccentricity is $\frac{1}{2}$, one of the foci is(2,3) and a directrix is x = 7 . Also find the length of the major and minor axes of the ellipse.

7) Find the foci, vertices and length of major and minor axis of the conic $4x^2+36y^2+40x-288y+532 = 0$.

8) For the ellipse$4x^2+y^2+24x-2y+21 = 0$, find the centre, vertices, and the foci. Also prove that the length of latus rectum is 2 .

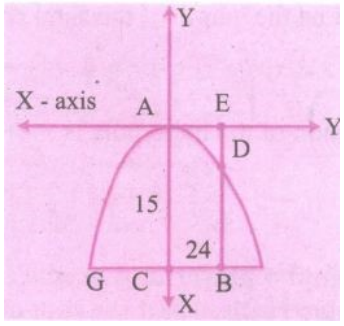
9) Find the equation of the hyperbola with vertices (0,±4) and foci(0,±6).

10) Find the centre, foci, and eccentricity of the hyperbola $11x^2-25y^2-44x+50y-256 = 0$

11) The orbit of Halley's Comet (Fig. 5.51) is an ellipse 36.18 astronomical units long and by 9.12 astronomical units wide. Find its eccentricity.

12) Find the equations of tangent and normal to the parabola $x^2+6x+4y+5=0$ at (1,-3) .

13) The guides of a railway bridge is a parabola with its vertex at the highest point 15 m above the ends. If the span is 120 m, find the height of the bridge at 24 m from the middle point.



14) A kho-kho player In a practice Ion while running realises that the sum of tne distances from the two kho-kho poles from him is always 8m. Find the equation of the path traced by him of the distance between the poles is 6m.

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RAVI MATHS TUITION CENTER, NEAR VILLIVAKKAM RLY STATION, CHENNAI – 82.
WHATSAPP - 8056206308

Two Dimensional Analytical Geometry-II

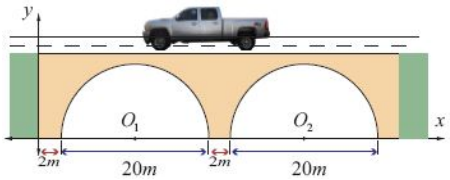
12th Standard

Maths

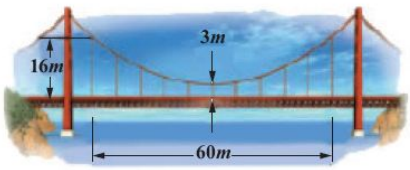
Exam Time : 02:00:00 Hrs | Total Marks : 75

15 x 5 = 75

1) A road bridge over an irrigation canal have two semi circular vents each with a span of 20m and the supporting pillars of width 2m. Use Fig.5.16 to write the equations that model the arches.



2) Find the vertex, focus, directrix, and length of the latus rectum of the parabola $x^2-4x-5y-1=0$.
3) Find the foci, vertices and length of major and minor axis of the conic $4x^2+36y^2+40x-288y+532 = 0$.
4) Find the centre, foci, and eccentricity of the hyperbola $11x^2-25y^2-44x+50y-256 = 0$
5) Show that the line$x-y+4=0$ is a tangent to the ellipse $x^2+3y^2=12$. Also find the coordinates
of the point of contact.
6) The maximum and minimum distances of the Earth from the Sun respectively are 152×106 km and 94.5×106 km. The Sun is at one focus of the elliptical orbit. Find the distance from the Sun to the other focus.
7) Two coast guard stations are located 600 km apart at points A(0,0) and B(0,600). A distress signal from a ship at P is received at slightly different times by two stations. It is determined that the ship is 200 km farther from station A than it is from station B. Determine the equation of hyperbola that passes through the location of the ship.
8) A bridge has a parabolic arch that is 10m high in the centre and 30m wide at the bottom. Find the height of the arch 6m from the centre, on either sides.
9) An engineer designs a satellite dish with a parabolic cross section. The dish is 5m wide at the opening, and the focus is placed 1 2 . m from the vertex
(a) Position a coordinate system with the origin at the vertex and the x -axis on the parabola's axis of symmetry and find an equation of the parabola.
(b) Find the depth of the satellite dish at the vertex.
10) Parabolic cable of a 60m portion of the roadbed of a suspension bridge are positioned as shown below. Vertical Cables are to be spaced every 6m along this portion of the roadbed. Calculate the lengths of first two of these vertical cables from the vertex.

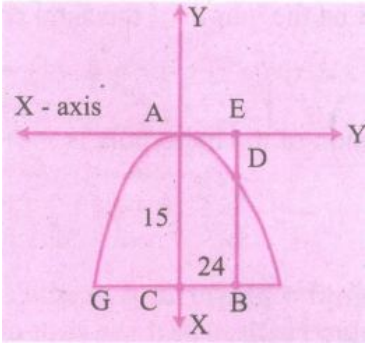


11) A rod of length 1 2 . m moves with its ends always touching the coordinate axes. The locus of a point P on the rod, which is 0 3 . m from the end in contact with x -axis is an ellipse. Find the eccentricity.

12) Points A and B are 10km apart and it is determined from the sound of an explosion heard at those points at different times that the location of the explosion is 6 km closer to A than B . Show that the location of the explosion is restricted to a particular curve and find an equation of it.

13) Find the vertex, focus, equation of directrix and length of the latus rectum of the following: $y^2-4y-8x+12=0$

14) The guides of a railway bridge is a parabola with its vertex at the highest point 15 m above the ends. If the span is 120 m, find the height of the bridge at 24 m from the middle point.



15) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following :

$9x^2-y^2-36x-6y+18 = 0$

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RAVI MATHS TUITION CENTER PH - 8056206308

Two Dimensional Analytical Geometry-II FULL TEST

Date : 19-Jul-19

12th Standard 2019 EM

Maths

Reg.No. : | | | | | | |

Time : 02:30:00 Hrs

Total Marks : 100

20 x 1 = 20

1) The equation of the circle passing through(1,5) and (4,1) and touching y -axis is $x^2+y^2-5x-6y+9+(4x+3y-19)=0$ whereλ is equal to

(a) $0, -\frac{40}{9}$ (b) 0 (c) $\frac{40}{9}$ (d) $\frac{-40}{9}$

2) The eccentricity of the hyperbola whose latus rectum is 8 and conjugate axis is equal to half the distance between the foci is

(a) $\frac{4}{3}$ (b) $\frac{4}{\sqrt{3}}$ (c) $\frac{2}{\sqrt{3}}$ (d) $\frac{3}{2}$

3) The circle $x^2+y^2=4x+8y+5$intersects the line$3x-4y=m$ at two distinct points if

(a) $15< m < 65$ (b) $35< m < 85$ (c) $-85< m < -35$ (d) $-35< m < 15$

4) The length of the diameter of the circle which touches the x -axis at the point (1,0) and passes through the point (2,3) .

(a) $\frac{6}{5}$ (b) $\frac{5}{3}$ (c) $\frac{10}{5}$ (d) $\frac{3}{5}$

5) The radius of the circle$3x^2+by^2+4bx-6by+b^2=0$ is

(a) 1 (b) 3 (c) $\sqrt{10}$ (d) $\sqrt{11}$

6) The centre of the circle inscribed in a square formed by the lines $x^2-8x-12=0$ and $y^2-14y+45=0$ is

(a) (4,7) (b) (7,4) (c) (9,4) (d) (4,9)

7) The radius of the circle passing through the point(6,2) two of whose diameter are$x+y=6$ and $x+2y=4$ is

(a) 10 (b) $2\sqrt{5}$ (c) 6 (d) 4

8) The area of quadrilateral formed with foci of the hyperbolas $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ and $\frac{x^2}{a^2}-\frac{y^2}{b^2}=-1$

(a) $4(a^2+b^2)$ (b) $2(a^2+b^2)$ (c) a^2+b^2 (d) $\frac{1}{2}(a^2+b^2)$

9) If the normals of the parabola $y^2=4x$ drawn at the end points of its latus rectum are tangents to the circle $(x-3)^2+(y+2)^2=r^2$, then the value of r^2 is

(a) 2 (b) 3 (c) 1 (d) 4

10) If $x+y=k$ is a normal to the parabola $y^2=12x$, then the value of k is

(a) 3 (b) -1 (c) 1 (d) 9

11) The ellipse E1$\frac{x^2}{9}+\frac{y^2}{4}=1$ is inscribed in a rectangle R whose sides are parallel to the coordinate axes. Another ellipse E2 passing through the point(0,4) circumscribes the rectangle R . The eccentricity of the ellipse is

(a) $\frac{\sqrt{2}}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

12) Let C be the circle with centre at(1,1) and radius =1. If T is the circle centered at(0, y) passing through the origin and touching the circleC externally, then the radius of T is equal to

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}}{\sqrt{2}}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

13) Area of the greatest rectangle inscribed in the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1.$ is

(a) 2ab (b) ab (c) $\sqrt{ab}$ (d) $\frac{a}{b}$

14) An ellipse hasOB as semi minor axes, F and F′ its foci and the angle FBF′ is a right angle. Then the eccentricity of the ellipse is

(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) $\frac{1}{\sqrt{3}}$

15) The eccentricity of the ellipse $(x-3)^2+(y-4)^2=\frac{y^2}{9}$ is

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{3\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$

16) If the two tangents drawn from a point P to the parabola$y2 = 4x$are at right angles then the locus of P is

(a) 2x+1=0 (b) x = −1 (c) 2x−1=0 (d) x =1

17) The circle passing through(1,-2) and touching the axis of x at (3,0) passing through the point

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

18) The locus of a point whose distance from (-2,0) is $\frac{2}{3}$ times its distance from the line x = $\frac{-9}{2}$ is

(a) a parabola (b) a hyperbola (c) an ellipse (d) a circle

19) The values of m for which the line $y=mx+2\sqrt{5}$ touches the hyperbola $16x^2-9y^2=144$ are the roots of $x^2-(a+b)x-4=0$, then the value of (a+b) is

(a) 2 (b) 4 (c) 0 (d) -2

20) If the coordinates at one end of a diameter of the circle $x^2+y^2-8x-4y+c = 0$ are (11,2) , the coordinates of the other end are

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

10 x 2 = 20

21) Find the equation of circles that touch both the axes and pass through (-4,-2) in general form.

22) Ify=2 +c is a tangent to the circle$x^2+y^2=16$, find the value of c .

23) Find the equation of the tangent and normal to the circle $x^2+y^2-6x+6y-8=0$ at (2,2) .

24) Prove that the length of the latus rectum of the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$ is $\frac{2b^2}{a}$.

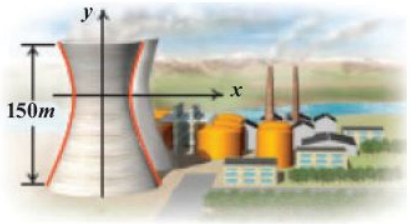
25) Find the equations of the two tangents that can be drawn from (5,2) to the ellipse $2x^2+7y^2=14$.

26) Prove that the point of intersection of the tangents at ' t_1 ' and ' t_2 'on the parabola $y^2 = 4ax$ is $\left[at_1t_2, a(t_1+t_2)\right]$.

27) If the normal at the point ' t_1 ' on the parabola $y^2 = 4ax$ meets the parabola again at the point' t_2 ', then prove that $t_2=-\left(t_1\frac{2}{t_1}\right)$

28) Cross section of a Nuclear cooling tower is in the shape of a hyperbola with equation $\frac{x^2}{30^2}-\frac{y^2}{44^2}=1$ The tower is 150m tall and the distance from the top of the tower to the centre of the hyperbola is half the distance from the base of the tower to

the centre of the hyperbola. Find the diameter of the top and base of the tower.



29) Find the vertex, focus, equation of directrix and length of the latus rectum of the following:
$y^2 = -8x$

30) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following:
$\frac{x^2}{25} + \frac{y^2}{144} = 1$

10 x 3 = 30

31) Find the general equation of the circle whose diameter is the line segment joining the points (−4,−2)and (1,1).

32) Examine the position of the point (2,3) with respect to the circle $x^2+y^2-6x-8y+12=0$.

33) Find the centre and radius of the circle$3x^2+(a+1)y^2+6x-9y+a+4=0$.

34) Find the equation of the circle passing through the points(1,1), (2,-1) , and(3,2) .

35) An equation of the elliptical part of an optical lens system is $\frac{x^2}{16} + \frac{y^2}{9}$ =1. The parabolic part of the system has a focus in common with the right focus of the ellipse .The vertex of the parabola is at the origin and the parabola opens to the right. Determine the equation of the parabola.

36) The equation of the ellipse is $\frac{(x-11)^2}{484} + \frac{y^2}{64} = 1$. (x and y are measured in centimeters) where to the nearest centimeter, should the patient's kidney stone be placed so that the reflected sound hits the kidney stone?

37) Two coast guard stations are located 600 km apart at points A(0,0) and B(0,600) . A distress signal from a ship at P is received at slightly different times by two stations. It is determined that the ship is 200 km farther from station A than it is from station B . Determine the equation of hyperbola that passes through the location of the ship.

38) Find the value of p so that 3x + 4y - p = 0 is a tangent to the circle $x^2 + y^2 - 64 = 0$.

39) Find the condition for the line lx + my + n = 0 is Rtangent to the circle $x^2 + y^2 = a^2$

40) Show that the line x + y + 1 = 0 touches the hyperbola $\frac{x^2}{16} - \frac{y^2}{15}$ = 1 and find the co-ordinates of the point of contact

6 x 5 = 30

41) Find the equation of the parabola with focus $\left(-\sqrt{2}, 0\right)$ and directrix $x=2\sqrt{2}$.

42) Find the vertex, focus, directrix, and length of the latus rectum of the parabola $x^2-4x-5y-1=0$.

43) Find the equation of the ellipse whose eccentricity is $\frac{1}{2}$, one of the foci is(2,3) and a directrix is x = 7 . Also find the length of the major and minor axes of the ellipse.

44) Find the foci, vertices and length of major and minor axis of the conic
$4x^2+36y^2+40x-288y+532 = 0$.

45) Find the centre, foci, and eccentricity of the hyperbola $11x^2-25y^2-44x+50y-256 = 0$

46) Find the equations of tangent and normal to the parabola $x^2+6x+4y+5=0$ at (1,-3) .

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RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

CHAPTER 5 FULL TEST Date : 02-Oct-19

12th Standard

Maths

Reg.No. : | | | | | | |

Exam Time : 02:30:00 Hrs Total Marks : 100

20 x 1 = 20

1) The equation of the circle passing through(1,5) and (4,1) and touching y -axis is $x^2+y^2-5x-6y+9+(4x+3y-19)=0$ whereλ is equal to

(a) $0, -\frac{40}{9}$ (b) 0 (c) $\frac{40}{9}$ (d) $\frac{-40}{9}$

2) The circle $x^2+y^2=4x+8y+5$intersects the line$3x-4y=m$ at two distinct points if

(a) $15< m < 65$ (b) $35< m < 85$ (c) $-85< m < -35$ (d) $-35< m < 15$

3) The radius of the circle$3x^2+by^2+4bx-6by+b^2=0$ is

(a) 1 (b) 3 (c) $\sqrt{10}$ (d) $\sqrt{11}$

4) If P(x, y) be any point on $16x^2+25y^2=400$ with foci F1 (3,0) and F2 (-3,0) then $PF_1\ PF_2$ + is

(a) 8 (b) 6 (c) 10 (d) 12

5) The radius of the circle passing through the point(6,2) two of whose diameter arex+y=6 and x+2y=4 is

(a) 10 (b) $2\sqrt{5}$ (c) 6 (d) 4

6) If the normals of the parabola $y^2 = 4x$ drawn at the end points of its latus rectum are tangents to the circle $(x-3)^2+(y+2)^2=r^2$, then the value of r^2 is

(a) 2 (b) 3 (c) 1 (d) 4

7) The ellipse E1$\frac{x^2}{9}+\frac{y^2}{4}=1$ is inscribed in a rectangle R whose sides are parallel to the coordinate axes. Another ellipse E2 passing through the point(0,4) circumscribes the rectangle R . The eccentricity of the ellipse is

(a) $\frac{\sqrt{2}}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

8) Tangents are drawn to the hyperbola $\frac{x^2}{9}+\frac{y^2}{4}=1$ 1parallel to the straight line2x−y=1. One of the points of contact of tangents on the hyperbola is

(a) $\frac{9}{2\sqrt{2}}, \frac{-1}{\sqrt{2}}$ (b) $\frac{-9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (c) $\frac{9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (d) $\left(3\sqrt{3}, -2\sqrt{2}\right)$

9) Let C be the circle with centre at(1,1) and radius =1. If T is the circle centered at(0, y) passing through the origin and touching the circleC externally, then the radius of T is equal to

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}}{\sqrt{2}}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

10) Area of the greatest rectangle inscribed in the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1.$ is

(a) 2ab (b) ab (c) $\sqrt{ab}$ (d) $\frac{a}{b}$

11) The eccentricity of the ellipse $(x-3)^2+(y-4)^2=\frac{y^2}{9}$ is

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{3\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$

12) The circle passing through(1,-2) and touching the axis of x at (3,0) passing through the point

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

13) The locus of a point whose distance from (-2,0) is $\frac{2}{3}$ times its distance from the line x = $\frac{-9}{2}$ is

(a) a parabola (b) a hyperbola (c) an ellipse (d) a circle

14) If the coordinates at one end of a diameter of the circle $x^2+y^2-8x-4y+c = 0$ are (11,2) , the coordinates of the other end are

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

15) If (0, 4) and (0, 2) are the vertex and focus of a parabola then its equation is

(a) $x^2 + 8y = 32$ (b) $y^2 + 8x = 32$ (c) $x^2 - 8y = 32$ (d) $y^2 - 8x = 32$

16) $y^2 - 2x - 2y + 5 = 0$ is a

(a) circle (b) parabola (c) ellipse (d) hyperbola

17) In an ellipse, the distance between its foci is 6 and its minor axis is 8, then e is

(a) $\frac{4}{5}$ (b) $\frac{1}{\sqrt{52}}$ (c) $\frac{3}{5}$ (d) $\frac{1}{2}$

18) The director circle of the ellipse $\frac{x^2}{9} - \frac{y^2}{5} = 1$ is

(a) $x^2 + y^2 = 4$ (b) $x^2 + y^2 = 9$ (c) $x^2 + y^2 = 45$ (d) $x^2 + y^2 = 14$

19) The equation of tangent at (1, 2) to the circle $x^2 + y^2 = 5$ is

(a) x+y=3 (b) x + 2y = 3 (c) x- y= 5 (d) x - 2y = 5

20) The angle between the tangents drawn from (1, 4) to the parabola $y^2 = 4x$ is _____

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{5}$ (d) $\frac{\pi}{5}$

ANSWER 7 ONLY 7 X 2 = 14

21) Determine whether $x+y-1=0$ is the equation of a diameter of the circle $x^2+y^2-6x+4y+c = 0$ for all possible values of c .

22) If $y=4x+c$ is a tangent to the circle $x^2+y^2=9$, find c .

23) Find the equation of the circle with centre (2,-1) and passing through the point (3,6) in standard form.

24) Obtain the equation of the circle for which (3,4) and (2,-7) are the ends of a diameter.

25) Find the vertices, foci for the hyperbola $9x^2-16y^2=144$.

26) Find centre and radius of the following circles.

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

27) Find the equation of tangent to the circle $x^2 + y^2 + 2x - 3y - 8 = 0$ at (2, 3).

28) Find the length of the tangent from (2, -3) to the circle $x^2 + y^2 - 8x - 9y + 12 = 0$.

29) If the line y = 3x + 1, touches the parabola $y^2 = 4ax$, find the length of the latus rectum?

30) Find the equation of the hyperbola whose vertices are (0, ±7) and e = $\frac{4}{3}$

ANSWER 7 ONLY 7 X 3 = 21

31) Find the equation of the circle described on the chord $3x+y+5= 0$ of the circle $x^2+y^2=16$ as diameter.

32) Find the centre and radius of the circle$3x^2+(a+1)y^2+6x-9y+a+4=0$.

33) A circle of area 9π square units has two of its diameters along the lines x+y=5 and x−y=1. Find the equation of the circle.

34) Determine whether the points(-2,1),(0,0) and (-4,-3) lie outside, on or inside the circle $x^2+y^2-5x+2y-5=0$.

35) Find the equation of the parabola with focus $\left(-\sqrt{2}, 0\right)$ and directrix $x=\sqrt{2}$.

36) Find the equation of the ellipse with foci (±2,0) , vertices (±3,0) .

37) Find the equation of the hyperbola with vertices (0,±4) and foci(0,±6).

38) Find the vertex, focus, equation of directrix and length of the latus rectum of the following:

$y^2 =16x$

39) Find the equation of the tangent to the parabola $y^2 =16x$perpendicular to $2x+2y+3=0$.

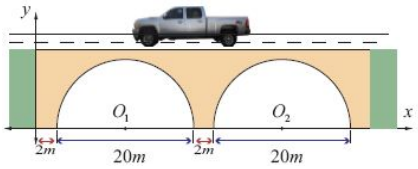
40) The parabolic communication antenna has a focus at 2m distance from the vertex of the antenna. Find the width of the antenna 3m from the vertex.

ANSWER 9 ONLY 9 x 5 = 45

41) Find the equation of the circle passing through the points(1,1), (2,-1) , and(3,2) .

42)

A road bridge over an irrigation canal have two semi circular vents each with a span of 20m and the supporting pillars of width 2m. Use Fig.5.16 to write the equations that model the arches.



43) Find the foci, vertices and length of major and minor axis of the conic $4x^2+36y^2+40x-288y+532 = 0$.

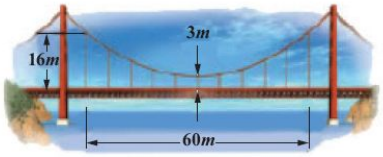
44) Find the centre, foci, and eccentricity of the hyperbola $11x^2-25y^2-44x+50y-256 = 0$

45) Two coast guard stations are located 600 km apart at points A(0,0) and B(0,600). A distress signal from a ship at P is received at slightly different times by two stations. It is determined that the ship is 200 km farther from station A than it is from station B. Determine the equation of hyperbola that passes through the location of the ship.

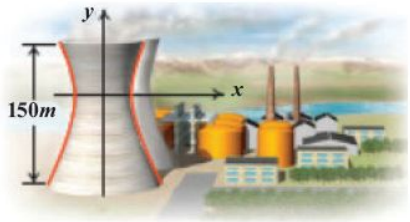
46) A tunnel through a mountain for a four lane highway is to have a elliptical opening. The total width of the highway (not the opening) is to be 16m, and the height at the edge of the road must be sufficient for a truck 4m high to clear if the highest point of the opening is to be 5m approximately . How wide must the opening be?

47) At a water fountain, water attains a maximum height of 4m at horizontal distance of 0 5 . m from its origin. If the path of water is a parabola, find the height of water at a horizontal distance of 0.75m from the point of origin.

48) Parabolic cable of a 60m portion of the roadbed of a suspension bridge are positioned as shown below. Vertical Cables are to be spaced every 6m along this portion of the roadbed. Calculate the lengths of first two of these vertical cables from the vertex.



49) Cross section of a Nuclear cooling tower is in the shape of a hyperbola with equation $\frac{x^2}{30^2} - \frac{y^2}{44^2} = 1$ The tower is 150m tall and the distance from the top of the tower to the centre of the hyperbola is half the distance from the base of the tower to the centre of the hyperbola. Find the diameter of the top and base of the tower.



50) Assume that water issuing from the end of a horizontal pipe, 7 5 . m above the ground, describes a parabolic path. The vertex of the parabolic path is at the end of the pipe. At a position 2 5 . m below the line of the pipe, the flow of water has curved outward 3m beyond the vertical line through the end of the pipe. How far beyond this vertical line will the water strike the ground?

51) On lighting a rocket cracker it gets projected in a parabolic path and reaches a maximum height of 4m when it is 6m away from the point of projection. Finally it reaches the ground 12m away from the starting point. Find the angle of projection.

52) Points A and B are 10km apart and it is determined from the sound of an explosion heard at those points at different times that the location of the explosion is 6 km closer to A than B . Show that the location of the explosion is restricted to a particular curve and find an equation of it.

53) Find the vertex, focus, equation of directrix and length of the latus rectum of the following: $x^2-2x+8y+17=0$

54) Identify the type of conic and find centre, foci, vertices, and directrices of each of the following :

$18x^2+12y^2-144x+48y+120 = 0$

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RAVI MATHS TUITION CENTER ,GKM COLONY, CH- 82. PH: 8056206308

2D ANALYTICAL GEOMETRY FULL

12th Standard

Maths

Reg.No. : | | | | | | |

Exam Time : 03:00:00 Hrs

Total Marks : 90

20 x 1 = 20

1) The equation of the circle passing through(1,5) and (4,1) and touching y -axis is $x^2+y^2-5x-6y+9+(4x+3y-19)=0$ whereλ is equal to

(a) $0, -\frac{40}{9}$ (b) 0 (c) $\frac{40}{9}$ (d) $\frac{-40}{9}$

2) The circle $x^2+y^2=4x+8y+5$intersects the line$3x-4y=m$ at two distinct points if

(a) $15< m < 65$ (b) $35< m < 85$ (c) $-85< m < -35$ (d) $-35< m < 15$

3) The radius of the circle$3x^2+by^2+4bx-6by+b^2=0$ is

(a) 1 (b) 3 (c) $\sqrt{10}$ (d) $\sqrt{11}$

4) If P(x, y) be any point on $16x^2+25y^2=400$ with foci F1 (3,0) and F2 (-3,0) then $PF_1\ PF_2 +$ is

(a) 8 (b) 6 (c) 10 (d) 12

5) The radius of the circle passing through the point(6,2) two of whose diameter are$x+y=6$ and $x+2y=4$ is

(a) 10 (b) $2\sqrt{5}$ (c) 6 (d) 4

6) If the normals of the parabola $y^2 = 4x$ drawn at the end points of its latus rectum are tangents to the circle $(x-3)^2+(y+2)^2=r^2$, then the value of r^2 is

(a) 2 (b) 3 (c) 1 (d) 4

7) The ellipse E1 $\frac{x^2}{9} + \frac{y^2}{4} = 1$ is inscribed in a rectangle R whose sides are parallel to the coordinate axes. Another ellipse E2 passing through the point(0,4) circumscribes the rectangle R . The eccentricity of the ellipse is

(a) $\frac{\sqrt{2}}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

8) Tangents are drawn to the hyperbola $\frac{x^2}{9} + \frac{y^2}{4} = 1$ 1parallel to the straight line$2x-y=1$. One of the points of contact of tangents on the hyperbola is

(a) $\frac{9}{2\sqrt{2}}, \frac{-1}{\sqrt{2}}$ (b) $\frac{-9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (c) $\frac{9}{2\sqrt{2}}, \frac{1}{\sqrt{2}}$ (d) $\left(3\sqrt{3}, -2\sqrt{2}\right)$

9) Let C be the circle with centre at(1,1) and radius =1. If T is the circle centered at(0, y) passing through the origin and touching the circleC externally, then the radius of T is equal to

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{\sqrt{3}}{\sqrt{2}}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

10) Area of the greatest rectangle inscribed in the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$ is

(a) 2ab (b) ab (c) $\sqrt{ab}$ (d) $\frac{a}{b}$

11) The eccentricity of the ellipse $(x-3)^2 +(y-4)^2 =\frac{y^2}{9}$ is

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{3\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$

12) The circle passing through(1,-2) and touching the axis of x at (3,0) passing through the point

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

13) The locus of a point whose distance from (-2,0) is $\frac{2}{3}$ times its distance from the line $x = \frac{-9}{2}$ is

(a) a parabola (b) a hyperbola (c) an ellipse (d) a circle

14)

If the coordinates at one end of a diameter of the circle $x^2+y^2-8x-4y+c = 0$ are (11,2) , the coordinates of the other end are

(a) (-5,2) (b) (2,-5) (c) (5,-2) (d) (-2,5)

15) If (0, 4) and (0, 2) are the vertex and focus of a parabola then its equation is

(a) $x^2 + 8y = 32$ (b) $y^2 + 8x = 32$ (c) $x^2 - 8y = 32$ (d) $y^2 - 8x = 32$

16) $y^2 - 2x - 2y + 5 = 0$ is a

(a) circle (b) parabola (c) ellipse (d) hyperbola

17) In an ellipse, the distance between its foci is 6 and its minor axis is 8, then e is

(a) $\frac{4}{5}$ (b) $\frac{1}{\sqrt{52}}$ (c) $\frac{3}{5}$ (d) $\frac{1}{2}$

18) The director circle of the ellipse $\frac{x^2}{9} - \frac{y^2}{5} = 1$ is

(a) $x^2 + y^2 = 4$ (b) $x^2 + y^2 = 9$ (c) $x^2 + y^2 = 45$ (d) $x^2 + y^2 = 14$

19) The equation of tangent at (1, 2) to the circle $x^2 + y^2 = 5$ is

(a) x+y=3 (b) x + 2y = 3 (c) x- y= 5 (d) x - 2y = 5

20) The angle between the tangents drawn from (1, 4) to the parabola $y^2 = 4x$ is _____

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$ (c) $\frac{\pi}{5}$ (d) $\frac{\pi}{5}$

ANSWER 7 ONLY 7 X 2 = 14

21) Determine whether $x+y-1=0$ is the equation of a diameter of the circle $x^2+y^2-6x+4y+c = 0$ for all possible values of c .

22) If $y=4x+c$ is a tangent to the circle $x^2+y^2=9$, find c .

23) Find the equation of the circle with centre (2,-1) and passing through the point (3,6) in standard form.

24) Obtain the equation of the circle for which (3,4) and (2,-7) are the ends of a diameter.

25) Find the vertices, foci for the hyperbola $9x^2-16y^2=144$.

26) Find centre and radius of the following circles.

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

27) Find the equation of tangent to the circle $x^2 + y^2 + 2x - 3y - 8 = 0$ at (2, 3).

28) Find the length of the tangent from (2, -3) to the circle $x^2 + y^2 - 8x - 9y + 12 = 0$.

29) If the line $y = 3x + 1$, touches the parabola $y^2 = 4ax$, find the length of the latus rectum?

30) Find the equation of the hyperbola whose vertices are $(0, \pm 7)$ and $e = \frac{4}{3}$

ANSWER 7 ONLY 7 X 3 = 21

31) Find the equation of the circle described on the chord $3x+y+5= 0$ of the circle $x^2+y^2=16$ as diameter.

32) Find the centre and radius of the circle$3x^2+(a+1)y^2+6x-9y+a+4=0$.

33) A circle of area 9π square units has two of its diameters along the lines $x+y=5$ and $x-y=1$. Find the equation of the circle.

34) Determine whether the points(-2,1),(0,0) and (-4,-3) lie outside, on or inside the circle $x^2+y^2-5x+2y-5=0$.

35) Find the equation of the parabola with focus $\left(-\sqrt{2}, 0\right)$ and directrix $x=\sqrt{2}$.

36) Find the equation of the ellipse with foci $(\pm 2,0)$, vertices $(\pm 3,0)$.

37) Find the equation of the hyperbola with vertices $(0,\pm 4)$ and foci$(0,\pm 6)$.

38) Find the vertex, focus, equation of directrix and length of the latus rectum of the following:

$y^2 = 16x$

39) Find the equation of the tangent to the parabola $y^2 = 16x$perpendicular to $2x+2y+3=0$.

40) The parabolic communication antenna has a focus at 2m distance from the vertex of the antenna. Find the width of the antenna 3m from the vertex.

ANSWER 7 ONLY 7 x 5 = 35

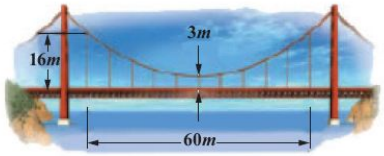
41) Find the equation of the circle passing through the points(1,1), (2,-1) , and(3,2) .

42) Two coast guard stations are located 600 km apart at points A(0,0) and B(0,600). A distress signal from a ship at P is received at slightly different times by two stations. It is determined that the ship is 200 km farther from station A than it is from station B. Determine the equation of hyperbola that passes through the location of the ship.

43) A tunnel through a mountain for a four lane highway is to have a elliptical opening. The total width of the highway (not the opening) is to be 16m, and the height at the edge of the road must be sufficient for a truck 4m high to clear if the highest point of the opening is to be 5m approximately . How wide must the opening be?

44) At a water fountain, water attains a maximum height of 4m at horizontal distance of 0 5 . m from its origin. If the path of water is a parabola, find the height of water at a horizontal distance of 0.75m from the point of origin.

45) Parabolic cable of a 60m portion of the roadbed of a suspension bridge are positioned as shown below. Vertical Cables are to be spaced every 6m along this portion of the roadbed. Calculate the lengths of first two of these vertical cables from the vertex.



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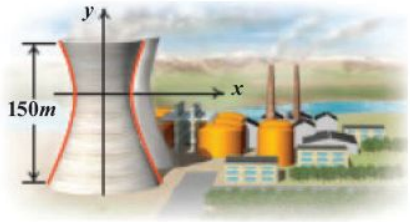

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