QB365 Question Bank Software Study Materials

Two Dimensional Analytical Geometry-II 50 Important 1Marks Questions With Answers (Book Back and Creative)

12th Standard

Maths

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 $x^2 + y^2 - 5x - 6y + 9 + \lambda(4x + 3y - 19) = 0$ where λ 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)** $\frac{10}{3}$ (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 F_1 (3, 0) and F_2 (-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 are $x + y = 6$ 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 $E_1 : \frac{x^2}{9} + \frac{y^2}{4} = 1$ is inscribed in a rectangle R whose sides are parallel to the coordinate axes. Another ellipse E_2 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 $\frac{x^2}{9} - \frac{y^2}{4} = 1$ parallel to the straight line 2x − y = 1. One of the points of contact of tangents on the hyperbola is

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

15) The equation of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ having 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 circle C externally, then the radius of T is equal to

(a) $\frac{\sqrt{3}}{\sqrt{2}}$ (b) $\frac{\sqrt{3}}{2}$ (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 has OB 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 $y^2 = 4x$ 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) (-3, 2)** (c) (5, -2) (d) (-2, 5)

26) 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 = $\frac{3}{2}$**

27) If a parabolic reflector is 20 cm in diameter and 5 cm in diameter and 5 cm deep, then its focus is _____

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

28) 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

29) 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) $\frac{1}{2}$

30) The length of the diameter of a circle with centre (1, 2) and passing through (5, 5) is _____

(a) 5 (b) $\sqrt{45}$ **(c) 10** (d) $\sqrt{50}$

31) 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) $\sqrt{19}$

32) 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

33) 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) $\frac{\pi}{5}$

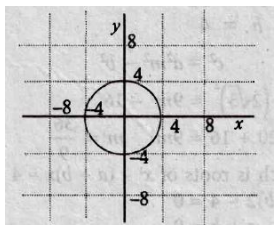
34) The length of major and minor axes of $4x^2 + 3y^2 = 12$ are _____

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

35) Give the coordinates of the circle's centre and its radius $(x-2)^2 + (y+9)^2 = 1$ _____

(a) (2, -9), r = 1 (b) (- 2, 9), r = 2 (c) (9, 2), r = 1 (d) None of these

36) Find the equation of the circle graphed below



(a) $x^2 + y^2 = 4$ (b) $y^2 = x^2 + 16$ **(c)** $x^2 + y^2 = 16$ (d) $x^2 + y^2 = 1$

37) Find the vertex and focus of the parabola $(y-2)^2 + 16(x-3) = 0$ _____

(a) vertex: (-3, -2), focus: (-3, 14) (b) vertex: (-3, -2), focu$: (-3, -18) (c) vertex: (3, -2), focus: (-7, -2)

(d) vertex: (3, 2), focus: (-1, 2)

38) Find the standard form of the equation of the parabola with the given characteristic and vertex at the origin focus: (0, 7) _____

(a) $x^2 = 28y$ (b) $x^2 = 7y$ (c) $x^2 = -7y$ (d) $y^2 = 28x$

39) Find the standard form of the equation of the parabola with the given characteristic and vertex at the origin directrix: x = 1

_____

(a) $x^2 = -4y$ (b) $x^2 = 4y$ **(c)** $y^2 = -4x$ (d) $y^2 = x$

40) Find the vertex and focus of the parabola $y^2 = -\frac{9}{8}x$ _____

(a) vertex: $\left(0, -\frac{5}{4}\right)$, focus: $\left(-\frac{9}{8}, -\frac{9}{8}\right)$ (b) vertex: $(0, 0)$, focus: $\left(0, -\frac{9}{8}\right)$ (c) vertex: $(0, 0)$, focus: $\left(-\frac{9}{8}, 0\right)$

(d) vertex: $(0, 0)$, focus: $\left(-\frac{9}{32}, 0\right)$

41) Find the centre and foci of the ellipse $\frac{(x+5)^2}{5} + \frac{(y+9)^2}{9} = 1$ _____

(a) centre: (5, 9), foci: (5, 7), (5, 11) **(b) centre: (-5, -9), foci: (-5, -11), (-5, -7)** (c) centre: (-5, -9), foci: (-7, -9), (-3, -9)

(d) centre: (5,9), foci: (3,,-9), (7,-9)

42) Find the centre and vertices of the ellipse $4x^2 + 9y^2 - 24x + 72y + 144 = 0$

(a) centre: (-4, 3), vertices: (-7, 3), (-1, 3) (b) centre: (-3, 4), vertices: (-5, 4), (-1, 4) (c) centre: (3, -4), vertices: (1, 4), (5, -4)

(d) centre: (3, -4), vertices: (0, -4), (6, 4)

43) Find the vertices and asymptotes of the hyperbola $9y^2 - 16x^2 = 144$

(a) vertices: $(0, \pm 4)$, asymptote: $y = \pm\frac{4}{3}x$ (b) vertices: $(0, \pm 4)$, asymptote: $y = \pm\frac{3}{4}x$

(c) vertices: $(\pm 4, 0)$, asymptote: $y = \pm\frac{4}{3}x$ (d) vertices: $(\pm 4, 0)$, asymptote: $y = \pm\frac{3}{4}x$

44) Write the equation of the ellipse that has its centre at the origin with focus at (0, 4) and vertex at (0, 7).

(a) $\frac{x^2}{49}+\frac{y^2}{33}=1$ (b) $\frac{x^2}{33}-\frac{y^2}{49}=1$ (c) $\frac{x^2}{33}+\frac{y^2}{49}=-1$ **(d)** $\frac{x^2}{33}+\frac{y^2}{49}=1$

45) Find the centre and vertices of the ellipse $x^2+9y^2+16x-54y+136=0$

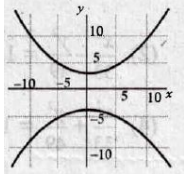
(a) centre: (3, -8), vertices: (0, -8), (6, -8) (b) centre: (8, -3), vertices: (7, -3), (9, -3)

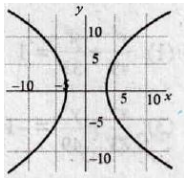
(c) centrel (-8, 3), vertices: (-9, 3), (-7, 3) **(d) centre: (-8, 3), vertices: (-11, 3), (-5, 3)**

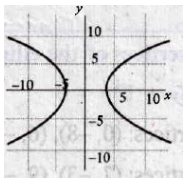
46) Find the standard form of the equation of the ellipse with the following characteristics Foci (± 4, 0) major axis of length :12

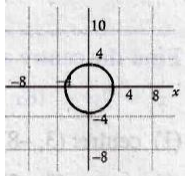
(a) $\frac{x^2}{36}+\frac{y^2}{20}=1$ (b) $\frac{x^2}{36}+\frac{y^2}{16}=1$ (c) $\frac{x^2}{16}+\frac{y^2}{36}=1$ (d) $\frac{x^2}{144}+\frac{y^2}{16}=1$

47) Graph the hyperbola $9x^2-9y^2=81$

(a) 

(b) 

(c) 

(d) 

48) Identify the conic by writing the equation in standard form $10y^2-20x^2+60y+160x-255=0$

(a) $\frac{(y-3)^2}{\frac{5}{2}}-\frac{(x-4)^2}{\frac{5}{4}}=1$; hyperbola **(b)** $\frac{(y+3)^2}{\frac{5}{2}}-\frac{(x-4)^2}{\frac{5}{4}}=1$; hyperbola (c) $\frac{(y+3)^2}{\frac{97}{2}}-\frac{(x-4)^2}{\frac{97}{4}}=1$; hyperbola

(d) None of these

49) If the plane x + αy + z -8 = 0 has equal intercepts on thc coordinate axes, the value of α is _____

(a) 1 (b) 2 (c) 8 (d) 1/8

50) The length of the latus rectum of the parabola y^2- 4x + 4y + 8 = 0 is _____

(a) -8 (b) 6 **(c) 4** (d) 2