



MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MATHEMATICS - II (B) MODEL PAPER 1

Section A

1. If $x^2+y^2+2gx+2fy-12=0$ represents

a circle with centre (2, 3), find g, f and its

radius.

Watch Video Solution

2. Find the value of k if the points (1, 3) and (2, k) are conjugated with

respect to the circle
$$x^2 + y^2 = 35$$
.





4. Find the co-ordinates of the point on the parabola $y^2 = 8x$ whose focal distance is 10.

5. If the eccentricity of a hyperbola is $\frac{5}{4}$, then find the eccentricity of its conjugate-hyperbola.



6. Evaluate the integerals.

$$\int\!\!\frac{dx}{1+e^x}, x\in R$$

D Watch Video Solution

7. Evaluate
$$\int \frac{1}{\cos^2 x + \sin 2x} dx$$

Watch Video Solution

8. Evaluate:
$$\int_0^2 |1-x| dx$$

Watch Video Solution

9. Find
$$\int_0^{\pi/2} rac{\sin^5 x}{\sin^5 x + \cos^5 x} dx$$

10. Find the differential equation corresponding to $xy = ae^x + be^{-x}$,

and an b are parameters.



11. Find the equation of tangent and normal at

$$(3,2)$$
 of the circle $x^2+y^2-x3y-4=0.$

Watch Video Solution

Section B

1. The equation of the circle which cuts the three circles
$$x^2+y^2-4x-6y+4=0, x^2+y^2-2x-8y+4=0, x^2+y^2-6x-6$$
 orthogonally is

2. Find the equation of the ellipes referred to its major and minor axes as the co-ordinate axes X, Y- respectively with latus rectum of length 4 and distance between foci $4\sqrt{2}$.



3. Find the equations of the tangents to the ellipse $2x^2 + y^2 = 8$ which

are

(i) parallel to x - 2y - 4

(ii) perpendicular to x + y + 2 = 0

Watch Video Solution

4. Find the centre eccentricity, foci, directrices and length of the lotus rectum of the hyperbolas.

 $4(y+3)^2 - 9(x-2)^2 = 1$

5. Evaluate the integral

$$\int\limits_{0}^{4} \left(16-x^{2}
ight)^{5\,/\,2} dx$$

Watch Video Solution

6. Solve the following differential equations.

 $rac{dy}{dx} + y an x = \cos^3 x$

Watch Video Solution

Section C

1. If (2,0),(0,1),(4,5) and (0,c) are concyclic, then find c.

2. Show that $x^2 + y^2 - 6x - 9y + 13 = 0$, $x^2 + y^2 - 2x - 16y = 0$ touch each other . Find the point of contact and the equation of common tangent at their point of contact.

Watch Video Solution 3. Derive the equation of a parabola in the standard form $y^2 = 4ax$ with diagram. Watch Video Solution

4. Evaluate the integerals.

$$\int \sqrt{rac{5-x}{x-2}} dx on(2,5)$$

5. Obtain reduction formula for $I_n=\int\!\!\cot^n x dx$, n being a positive integer , $n\geq 2$ and deduce the value of $\int\!\!\cot^4 x dx$.



6. The area included between the parabolas $y^2=4ax, x^2=4by$ is

Watch Video Solution

7. Find the equation of a curve whoise gradient is $\frac{dy}{dx} = \frac{y}{x} - \cos^2 \frac{y}{x}$, where x > 0, y > 0 and which passes through the point $\left(1, \frac{\pi}{4}\right)$.

Watch Video Solution

Section A I Very Short Answer Type Questions

1. Find the value of aif $2x^2 + ay^2 - 3x + 2y - 1 = 0$ represents a circle

and also find its radius



2. If the length of the tangent from (5,4) to

the circle $x^2+y^2+2ky=0$ is 1 the n find k.

Watch Video Solution

3. The length of the common chord of the two circles $(x-a)^2 + (y-b)^2 = c^2, (x-b)^2 + (y-a)^2 = c^2$ is

Watch Video Solution

4. Find the coordinates of the points on the parabola $y^2 = 2x$ whose focal distance is $\frac{5}{2}$.



5. Define rectangular hyperbola and find its eccentricity.



6.
$$\int_1^2 rac{e^x(1+x\log x)}{x}dx =$$

Watch Video Solution

7.
$$\int rac{\sin(an^{-1}x)}{1+x^2} dx, x\in R.$$

8. Evaluate
$$\int\limits_{0}^{\pi/2} \sin^5 x \cos^4 x dx$$

9. Evaluate the following integrals

(ii)
$$\int_0^2 |1-x| dx$$

Watch Video Solution



Watch Video Solution

Section B li Short Answer Type Questions

1. Find the equation of the circle whose centre

```
lies on the X- axis and passing through (\,-2,3) and (4,5)
```

2. If x + y = 3 is the equation of the chord AB of circle $x^2 + y^2 - 2x + 4y - 8 = 0$, find the equation of the circle having \overline{AB} as diameter.

3. Find the equation of the tangent and normal to the ellipse $9x^2 + 16y^2 = 144$ at the end of the latus rectum in the first quadrant.

Watch Video Solution

4. (i) Find the equations of the tangents to $9x^2 + 16y^2 = 144$, which makes equal intercepts on the coordinate axes.

(ii) Find the value of k if 4x + y + k = 0 is a tangent to the ellipse $x^2 + 3y^2 = 3$

5. Find the equations of the tangents to the hyperbola $3x^2 - 4y^2 = 12$ which are (i) parallel and (ii) perpendicular to the line y = x - 7



8. The solution of
$$(xy^2+x)dx+(yx^2+y)dy=0$$
 is





Section C lii Long Answer Type Questions

1. If (2,0),(0,1),(4,5) and (0,c) are concyclic then find c.

Watch Video Solution

2. Find the transberes common tangents of

the circles
$$x^2+y^2-4x-10y+28=0$$
 and x^2+y^2

+4x-6y+40.

Watch Video Solution

3. Evaluate the integerals.

 $\int\!\!\frac{2\cos x+3\sin x}{4\cos x+5\sin x}dx$

Watch Video Solution

5. Derive the standard form of the parabola.



6. Evaluate

(i)
$$\int_0^\pi \frac{x \sin x}{1 + \sin x} dx$$

Watch Video Solution

7. The solution of $ig(1+y^2ig)dx=ig(an^{-1}y-xig)dy$ is