

MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MATHEMATICS -II(B) MODEL PAPER 5

Section A

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

circle with cerntre (-4, -3) then find g, f

and the radius of the circle.

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

the circle $x^2 + y^2 - 5x + 4y + k = 0$ is

 $\sqrt{37}$ then find k.

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3. Find the angle between the circles

 $x^2+y^2+4x-14y+28=0$ and

 $x^2 + y^2 + 4x - 5 = 0$

4. Find the equation of the parabola whose vertex is

(3,-2) and focus is (3,1).



5. If the angle between the asymptotes is 30° then find

its eccentricity.



7.
$$\int rac{(1+x)e^x}{\cos^2(xe^x)} dx =$$

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8. Evaluate the integrals .

$$\int\limits_{0}^{4}|2-x|dx$$

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9. Find
$$\int\limits_{0}^{2\pi} \sin^4 x \cos^6 x dx$$

10. The differential equation of curve given by $y = a \cos\left(\frac{n}{x} + b\right)$ (a,b are arbitrary constants)

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1. Show that x + y + 1 = 0 touches the circle

 $x^2+y^2-3x+7y14=0$ and find its

point of contact.

2. If x+y=3 is the equation of the chord AB of the circle

 $x^2 + y^2 - 2x + 4y - 8 = 0$, find the equation of the

circle having as diameter.



3. Find the equation of the ellipse in the standard form such that distance between foci is 8 and distance between directrices is 32.



4. Find the equations of tangents to the ellipse $2x^2 + y^2 = 8$ which are Parallel to x-2y-4=0

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5. Find the equations of tangents to the ellipse $2x^2 + y^2 = 8$ which are perpendicular to x+y+2=0

6. Find the centre, foci, eccentricity equation of the directrices, length of the latus rectum of the hyperbola. $16y^2-9x^2=144$



8. Solve the following differential equations.

$$rac{dy}{dx} + rac{4x}{1+x^2}y = rac{1}{\left(1+x^2
ight)^2}$$

Section C

1. Show that the following four points in each jof the following are concyclic and find the equation of the circle on which they lie.

$$(1,1),(\,-\,6,0),(\,-\,2,2),(\,-\,2-8)1$$





touch each other find the point of contact and the equation of the common tangent at their point of contact.



3. Show that the equation of common tangents to the

circle $x^2+y^2=2a^2$ and the parabola $y^2=8ax$ are $y=\pm(x+2a).$

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4. Evaluate
$$\int rac{2x+5}{\sqrt{x^2-2x+10}} \Bigg) dx.$$

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is a positive integer $n\geq 2$ and deduce the value of $\sqrt{{
m sec}^5\,xdx}$

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6. Show that the area of the region bounded by $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ (ellipse) is π ab. Also deduce the area of the circle $x^2 + y^2 = a^2$

7. Solve the following differential equations.

$$ig(x^2-y^2ig)dx-xydy=0$$

