



MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MATHEMATICS-II(B) MODEL PAPER 3

Section A

1. Find the equation of the circle passing through

(3,4) and having the centre at (-3,4)

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.

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3. If the the angle between the circles

$$x^2+y^2-12x-6y+41=0$$
 and $x^2+y^2+kx+6y-59=0$ is 45° find k.

4. If ((1)/(2),2) is one extermity of a focalchord of the parabola $y^2 = 8x$. Find the co-ordinates of the other extremity.

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5. Find the equation of the hyperbola whose are

 $(\pm 5, 0)$ the transverse axis is of length 8.

6. Evaluate the integerals.

$$\int \!\! rac{\left(3x+1
ight) ^{2}}{2x} dxx \in I \subset R ackslash \{0\}$$

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7. Evaluate :
$$\int \frac{\log x}{x} dx$$
 .

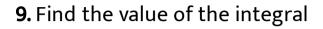
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8. Evaluate
$$\lim_{n
ightarrow\infty} \, rac{2^k+4^k+6^k+\ldots+\left(2n
ight)^k}{n^{k+1}}$$
 by

using the method of finding definite integral as the

limit of a sum.





$$\int\limits_{0}^{2\pi}\sin^{2}x\cos^{4}xdx$$

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10. Solve
$$rac{dy}{dx}=e^{x-y}+x^2e^{-y}.$$



1. Find the equation of the circle with centre (-2,3) cutting a chord length 2 units on 3x + 4y + 4 = 0

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2. Find the equation of the circle which passes through the origin and intersects each of the following circles orthogonally.

$$x^2 + y^2 - 4x + 6y + 10, x^2 + y^2 + 12y + 6 = 0$$



3. Find the length of major axis,minor axis, latus rectum, eccentricity co-ordinates of centre, foci and the equations of directrices of the following ellipse. $4x^2 + y^2 - 8x + 2y + 1 = 0$

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4. A circle of radius 4, is concentric with the ellipse $3x^2 + 13y^2 = 78$. Prove that a common tangent is inclined to the major axis at an angle $\frac{\pi}{4}$

5. Tangents to the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ make angle θ_1, θ_2 with transvrse axis of a hyperbola. Show that the points of intersection of these tangents lies on the curve $2xy = k(x^2 - a^2)$ when $\tan \theta_1 + \tan \theta_2 = k$

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6. Evaluate :
$$\int_{0}^{\frac{\pi}{4}} \log(1+\tan x) dx$$

7. Solve
$$\frac{1}{x} \frac{dy}{dx} + y$$
. $e^x = e^{(1-x)e^x}$
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Section C
1. Find the equation of the circle passing through (2,

1), (5, 5), (-6, 7).



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.

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3. Find the equation of the parabola whose axis is parallel to X-axis and which passes through these points.

(-2,1),(1,2), and (-1,3)

4.
$$\int (6x+5)\sqrt{6-2x^2+x}dx$$

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5. Show that

If
$$I_n=\int\!\!\cos^n x dx,\,\, ext{then show that}\ I_n=rac{1}{n}\!\cos^{n-1}x\sin x+rac{n-1}{n}I_{n-2}.$$

6.
$$\int_0^\pi rac{x}{1+\cos^2 x} dx =$$



7. Solve $ig(x^3-3xy^2ig)dx+ig(3x^2y-y^3ig)dy=0$

