MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

MATHEMATICS -II(B) MODEL PAPER -10

Section A

1. Find the area of the triangle formed by the line $3x - 4y + 12 = 0$ with the coordinate axes.

Watch Video Solution

2. Find the equationof the straight line passing through the point (-2,4) and making intercepts, whose sum is zero

Watch Video Solution

3. Find the angle between the planes $2x - y + z - 6 = 0, x + y + 2z - 7 = 0.$

Watch Video Solution

4. If (3,2,-1),(4,1,1) and (6,2,5) are three vertices and (4,2,2) is the centroid of a tetrahedro, find the fourth vertex to that tetrahedron.

Watch Video Solution

5. Compute $Lt_{x \to 0} \frac{a^x - 1}{b^x - 1} (a > 0, b > 0, b \neq 1).$

Watch Video Solution

6. Find $Lt_{x \to 0+}\left(\frac{2|x|}{x} + x + 1\right)$

Watch Video Solution

7. IF $y - \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, find $\frac{dy}{dx}$.

Watch Video Solution

8. If $y = ae^{nx} + be^{-nx}$, then prove that $y'' = n^2 y$.

Watch Video Solution

9. If $y = x^2 + x, x = 10, \Delta x = 0.1,$ then find Δy and dy

Watch Video Solution

10. Verify Rolle's theorem of the function $\log\left(x^2 + 2\right) - \log 3$ on (-1,1)

Watch Video Solution

Section B

1. Find the equation of the locus of P, if A=(2,3), B=(2,-3) and PA +PB =8.

Watch Video Solution

2. When the axes are rotated through an angle $\pi/6$. Find the transformed equation of $x^2 + 2\sqrt{3}xy - y^2 = 2a^2$.

Watch Video Solution

3. Find the points on the line $3x - 4y - 1 = 0$ which are at a distance of 5 units from the point (3,2).

Watch Video Solution

4. Is f given by $f(x) = \begin{cases} \frac{x^2-9}{x^2-2x-3} & \text{if } 0 < x < 5 \text{ and } x \neq 3 \\ 1.5 & \text{if } x = 3 \end{cases}$, continuous at the points 3 .

Watch Video Solution

5. Find the derivative of $x \sin x$ from the first principle.

Watch Video Solution

6. The volume of a cube is increasing at the rate of $8cm^3/\sec$. How fast is the surface area increasing when the length of an edge is 12 cm ?

Watch Video Solution

7. A particle is moving in a straight line so that after t seconds its distance is s (in cms) from a fixed point on the line is given by $s = f(t) = 8t + t^3$. Find the velocity at time t= 2sec (ii) the initial velocity can acceleration at t=2 sec

Watch Video Solution

8. A particle is moving in a straight line so that after t seconds its distance is s (in cms) from a fixed point on the line is given by

$s = f(t) = 8t + t^3$. Find the velocity at time t= 2sec (ii) the initial velocity can acceleration at t=2 sec

Watch Video Solution

9. A particle is moving in a straight line so that after t seconds its distance is s (in cms) from a fixed point on the line is given by $s = f(t) = 8t + t^3$. Find the velocity at time t= 2sec (ii) the initial velocity can acceleration at t=2 sec

Watch Video Solution

Section C

1. Find the orthocentre of the triangle formed by the vertices (-2,-1),(6,-1),(2,5)

Watch Video Solution

2. If the equation $S \equiv ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a pair of parallel straight lines then

show that

(i) $h^2 = ab$ (ii) $af^2 = bg^2$ and

(iii) the distance between the parallel lines

$$= \sqrt{\frac{g^2 - ca}{a(a+b)}} = \sqrt{\frac{f^2 - bc}{b(a+b)}}$$

Watch Video Solution

3. If the equation

$$S \equiv ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$$

represents a pair of parallel straight lines then

show that

(i) $h^2 = ab$ (ii) $af^2 = bg^2$ and

(iii) the distance between the parallel lines

$$= \sqrt{\frac{g^2 - ca}{a(a+b)}} = \sqrt{\frac{f^2 - bc}{b(a+b)}}$$

Watch Video Solution

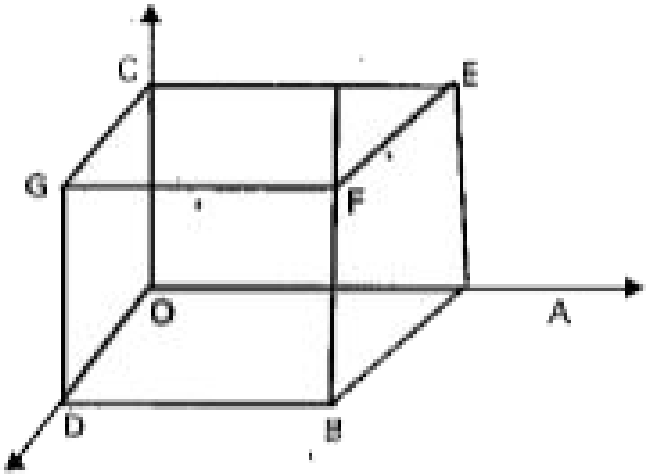
4. If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents two parallel lines then prove that the distance between the parallel lines is $2\sqrt{\frac{g^2 - ac}{a(a+b)}}$ or $2\sqrt{\frac{f^2 - bc}{b(a+b)}}$.

Watch Video Solution

5. Show that the lines joining the origin to the points of intersection of the curve $x^2 + xy + y^2 + 3x + 3y - 2 = 0$ and the straight line $x - y - \sqrt{2} = 0$are mutually perpendicular .

Watch Video Solution

6. Find the angle between the diagonals of a cube .



Watch Video Solution

7. If

$$y = x\sqrt{a^2 + x^2} + a^2 \log\left(x + \sqrt{a^2 + x^2}\right),$$

then show that $\frac{dy}{dx} = 2\sqrt{a^2 + x^2}$.

Watch Video Solution

8. Find the positive integers x and y such that $x + y = 60$ and xy^3 is maximum.

Watch Video Solution

9. S.T the curves $6x^2 - 5x + 2y = 0, 4x^2 + 8y^2 = 3$ touch each other at $\left(\frac{1}{2}, \frac{1}{2}\right)$.

Watch Video Solution