MATHS

BOOKS - VIKRAM PUBLICATION (ANDHRA PUBLICATION)

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Section A Very Short Answer Type Questions

1. Find the equation of the straight line passing through (-4,5) and cutting off equal

and non-zero intercepts on the co-ordinate axes.

2. Find the equation of the straight line perpendicular to the line 5x-3y+1=0 and passing through the point (4,-3).

3. Find the coordinates of the vertex 'C' of $\triangle ABC$ if its centroid is the origin and the vertices A,B are (1,1,1) are (-2,4,1) respectively.

4. Find the angle between the planes $x + 2y + 2z - 5 = 0$ and $3x + 3y + 2z - 8 = 0$.

5. Compute $\lim\limits_{x \to a} \dfrac{\tan(x - a)}{x^2 - a^2}$ $(a \neq 0)$.

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6. Evaluate $Lt_{x \to 0} \dfrac{e^x - 1}{\sqrt{1 + x} - 1}$

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7. Find the derivative of $y = \sqrt{2x - 3} + \sqrt{7 - 3x}$.

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8. Find the derivative of $y = \sin^{-1}\left(\dfrac{2x}{1+x^2}\right)$

9. Find Δy and dy for the function $y = x^2 + x$

, when $x = 10, \Delta x = 0.1$

10. Verify Rolle's theorem for the function $y = f(x) = x^2 + 4$ on [-3,3]

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1. A(5,3) and B(3,-2) are 2 fixed points. Find the equation of locus of P, so that the area of $\triangle PAB$ is 9sq. Units.

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2. When the axes are rotated through an angle $45°$, the transformed equation of a curve is $17x^2 - 16xy + 17y^2 = 225$. Find the original equation of the curve.

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3. A straight line with slope 1 passes through Q(-3,5) and meets the straight line x+y-6=0 at P. Find the distance PQ.

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4. If f is given by

$$f(x) = \begin{cases} k^2 x - k & \text{if } x \geq 1 \\ 2 & \text{if } x < 1 \end{cases}$$

is a continuous function on R, then find k.

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5. Find the derivative of x^3 from the first principle.

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6. A particle is moving along a line according to s=f(t) $= 4t^3 - 3t^2 + 5t - 1$ where s is measured in meter and t is measured in seconds. Find the velocity and acceleration at time t. At what time the acceleration is zero.

7. Determine the intervals in which $f(x) = \dfrac{2}{(x-1)} + 18x, \ \forall x \in R - \{0\}$ is stricly increasing and decreasing.

Section C Long Answer Type Questions

1. Find the orthocentre of the triangle whose sides are

$$7x + y - 10 = 0, x - 2y + 5 = 0, x + y + 2 = 0$$

2. Prove that the line $lx + my + n = 0$ and the pair of lines

$(lx + my)^2 - 3(mx - ly)^2 = 0$ form   an

equilateral   triangle   and   its   area   is

$$\dfrac{n^2}{\sqrt{3}(l^2 + m^2)}$$

3. Find the value if k , if the lines joining the

origin with the points of intersection of the

curve $2x^2 - 2xy + 3y^2 + 2x - y - 1 = 0$ and

the x + 2y = k are mutually perpendicular .

4. Find the angle between the lines whose direction cosines are given by the equation $3l + m + 5n = 0$ and $6mn - 2nl + 5lm = 0$

5. IF the tangent at a point on the curve $x^{2/3} + y^{2/3} = a^{2/3}$ intersects the coordinate axes in A and B then show that the length AB is a constant.

6. A window is in the shap of a rectangle surmounted by a semicircle. If the perimeter of the window is 20 ft, find the maximum area.