MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

SOLVED MODEL PAPER -7

Section A

1. Transform the equation $3x + 4y + 12 = 0$ into slope intercept form

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2. Transform the equation $4x + 3y - 12 = 0$ into intercept form.

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3. Find the value of 'p' if the lines $4x - 3y - 7 = 0, 2x + py + 2 = 0$ and $6x + 5y - 1 = 0$ are concurrent .,

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4. Find the ratio which the XZ -plane divides the line joining $A(- 2, 3, 4)$ and $B(1, 2, 3)$

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

6. Compute $\underset{x \to 0}{\text{Lt}} \left(\dfrac{\sin ax}{\sin bx} \right) b \neq 0, a \neq b$

7. Compute $\underset{x \to \infty}{\text{Lt}} \dfrac{x^2 + 5x + 2}{2x^2 - 5x + 1}$

8. If $y = \dfrac{a - x}{a + x}$, $(x \neq -a)$ then find $\dfrac{dy}{dx}$

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9. If $y = x^4 + \tan x$ then find y".

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10. If $y = x^2 + 3x + 6$ then find $\triangle y$ and dy when $x = 10, \; \triangle x = 0.01$.

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

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Section B

1. Find the locus of the third vertex of a right angled triangle , the ends of whose hypotenuse are (4,0) and (0,4)

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2. Find the point to which the origin has to be shifted to eliminate x and y terms in the equation

$$4x^2 + 9y^2 - 8x + 36y + 4 = 0$$

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.

4. Check the continuity of 'f' given by

$$f(x) = \begin{cases} 4 - x^2 & \text{if } x \leq 0 \\ x - 5 & \text{if } 0 < x \leq 1 \\ 4x^2 - 9 & \text{if } 1 < x < 2 \\ 3x + 4 & \text{if } x \geq 2 \end{cases} \text{at point s}$$

x = 0, 1, 2.

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

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6. Let a kind of bacteria grow in such a way that at time t sec, there are $t^{3/2}$ bacteria. Find tha rate of growth

at time t = 4 hours.

7. Determine the intervals in which

$$f(x) = \frac{2}{(x-1)} + 18x, \; \forall x \in R - \{0\} \quad \text{is} \quad \text{stricly}$$

increasing and decreasing.

Section C

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

2. S.T the equation $2x^2 - 13xy - 7y^2 + x + 23y - 6 = 0$ represents a pair of straight lines. Also find the angle between them and the coordinates of the point of intersection of the lines.

3. 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 .

4. Find the angle between the lines whose d.c's are related by $l + m + n = 0 \& l^2 + m^2 - n^2 = 0$

5. if $\sin y = x \sin(a + y)$ then show that $\dfrac{dy}{dx} = \dfrac{\sin^2(a + y)}{\sin a}$.

6. At a point (x_1, y_1) on the curve $x^3 + y^3 = 3axy$, show that the tangent is $\left(x_1^2 - ay_1\right)x + \left(y_1^2 - ax_1\right)y = ax_1y_1$.

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

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