MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MARCH-2018 [AP]

Section A

1. Find the value of x, if the slope of the line passing through (2,5) and (x,3) is 2.

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2. Find the sum of the squares of the intercepts of the line 4x-3y=12 on the axes of co-ordinate.

3. Show that the points (1,2,3), (2,3,1) and (3,1,2) form an equilateral triangle.

4. Find the intercepts of the plane 4x+3y-2z+2=0 on the coordinate axes.

5. Compute $Lt_{x \to 0} \dfrac{e^{3x} - 1}{x}$.

6. Evalute $Lt_{x \to \infty} \dfrac{11x^3 - 3x + 4}{13x^3 - 5x^2 - 7}$.

7. If $f(x) = \sin(\log x), (x > 0)$ then find f'(x)

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

9. If the increase in the side of a square is 4% then find the approximate percentage of increase in the area of the square.

10. Verify Rolle's theorem for the function $f(x) = x(x + 3)e^{-\frac{x}{2}}$ in [-3,0].

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

2. When the origin is shifted to (-1,2) by the translation of axes, find the transformed equation $x^2 + y^2 + 2x - 4y + 1 = 0$.

3. Show that the lines

$2x + y - 3 = 0, 3x + 2y - 2 = 0$ and $2x - 3y - 23 = 0$

are concurrent and find the point of concurrency.

4. Find the real constants a , b, so that the function f

given by $f(x) = \begin{cases} \sin x & \text{if } x \leq 0 \\ x^2 + a & \text{if } 0 < x < 1 \\ bx + 3 & \text{if } 1 \leq x \leq 3 \\ -3 & \text{if } x > 3 \end{cases}$ is

continuous on R .

5. Find the derivative of sin2x from the first principle.

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

7. At any point t on the curve x=a(t+sint), y=a(1-cost), find the lengths of tangent, normal, subtangent and subnormal.

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1. Find the circumcentre of the triangle whose vertices are (1,3) (0,-2) and (-3,1).

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2. Show that the lines joining the origin with the points of intersection of the curve $7x^2 - 4xy + 8y^2 + 2x - 4y - 8 = 0$ with the line $3x - y = 2$ are mutually perpendicular.

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3. Find the direction cosines of the two lines which are connected by the relations $l - 5m + 3n = 0, 7l^2 + 5m^2 - 3n^2 = 0$

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4. Find the derivative of $x^{\tan x} + (\sin x)^{\cos x}$ w.r. to x.

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5. Find two positive integers whose sum is 16 and the sum of squares is minimum.

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