MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MAY-2018(AP)

Section A

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

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2. Find the value of a it the area of the triangle formed by the liners x=0,y=0,3x+4y=a is 6 sq units.

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

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4. Find the equation of the plane passing through the point (1,1,1) and parallel to the plane $x + 2y + 3z - 7 = 0$

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5. Compute $Lt_{x \to 0} \frac{\sin ax}{\sin bx}, b \neq 0, a \neq b$

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6. Evaluate $\underset{x \to \infty}{\text{Lt}} \dfrac{11x^3 - 3x + 4}{13x^3 - 5x^2 - 7}$

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7. Find the derivative of $y = e^{\sin^{-1} x}$.

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8. Find the derivative of $\tan^{-1} \sqrt{\dfrac{1 - \cos x}{1 + \cos x}}$.

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9. Find the approximate value of $\sqrt[3]{65}$

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10. Verify Rolle's theorem for the function sinx-sin2x on $[0, \pi]$

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Section B

1. Find the equation of locus of a point such that the difference of whose distances from (-5,0) and (5,0) is 8

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2. Find the transformed equation of $2x^2 + y^2 - 4x + 4y = 0$ when the origin is shifted to the point (-1, 2)

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3. Find the equation of the straight line passing through A(-1,3) and (i) parallel (ii) perpendicular to the straight line passing through B(2,-5),C(4,6)

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4. If f is given by $f(x) = \begin{cases} k^2x - k & \text{if } x \geq 1 \\ 2 & \text{if } x < 1 \end{cases}$ is a continuous function on R, then find k .

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5. Find the derivative of $\cos ax$ from the first Principle.

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6. The volume of a cube is increasing at a rate of 9 cubie centimeters per second. How fast is the surface area increasing when the length of edge is 10 cms?

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7. Find the length of subtangent subnormal at a pont t on the curve $x = a(\cos t + \sin t) y = a(\sin t - t \cos t)$

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Section C

1. Find the orthocentre of the triagle whose vertices are $(-2, -1)(6, -1), (2, 5).$

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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.

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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 .

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4. Show that the lines whose direction cosines are given by $l + m + n = 0$,

$2mn + 3nl - 5lm = 0$ are perpendicular to each other .

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5. If $y = \tan^{-1}\left(\frac{2x}{1-x^2}\right) + \tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right) - \tan^{-1}\left(\frac{4x-4x^3}{1-6x+x^4}\right)$, then show that $\frac{dy}{dx} = \frac{1}{1+x^2}$.

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

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7. Find two positive numbers whose sum is 15 so that the sum of their squares is minimum.

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