MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MARCH-2014

Vsaq

1. Find the ratio in which the straight line $2x + 3y - 5 = 0$ divides the line joining the

points (0,0) and (-2,1).

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2. Find the equation of the straight line passing through the points $\left(at_1^2, 2at_1\right), \left(at_2^2, 2at_2\right)$.

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3. 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.

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4. Reduce the equation $x + 2y - 3z - 6 = 0$ of the plane to the normal form.

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5. Evaluate $Lt_{x \to 0} \frac{\sqrt{1+x} - 1}{x}$

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

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7. Find the derivative of $\log(\sec x + \tan x)$.

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8. Find the derivative of $\cos^{-1}\left(4x^3 - 3x\right)$ w.r.to x.

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

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10. Verify Rolle's theroem for the function $x^2 - 1$ on [-1,1]`.

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Saq

1. Find the locus of P(x,y) which moves such that its distances from A(5,-4),B(7,6) are in the ratio 2:3.

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2. When the axes are rotated through an angle α, find the transformed equation of $x\cos\alpha + y\sin\alpha = p$.

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3. Find the value of y, if the line joining (3,y) and (2,7) is parallel to the line joining the points (-1,4) and (0,6).

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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 .

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5. Find the derivative of $\tan 2x$ from the first principle.

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6. Find the angle between the curves $x + y + 2 = 0$ and $x^2 + y^2 - 10y = 0$

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7. The volume of a cube is increasing at a rate of 8 cubie centimeters per second. How fast is the surface area increasing when the length of the edge is 12 cm?

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Laq

1. If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a pair of lines then prove that

$\triangle = abc + 2fgh - af^2 - bg^2 - ch^2 = 0.$

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2. If $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents two parallel lines then prove that $h^2 = ab.$

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3. Find the condition for the chord lx + my=1 of the circle $x^2 + y^2 = a^2$ to subtend a right

angle at the origin.

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4. If the vertices of a triangle are $A(1, 4, 2), B(-2, 1, 2), C(2, 3, -4)$ then find $\angle A, \angle B, \angle C$.

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

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6. 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.

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7. From a rectangular sheet of dimensions $30cm \times 80cm$, four squares of sides x cm are

removed at the corners, and the sides are then turned up so as to form an open rectangular box. What is the value of x, so that the volume of the box is the greatest?

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