MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MARCH-2015 (AP)

Ipe March 2015 Ap Maths 1 B

1. Find the area of the triangle formed by the line $3x - 4y + 12 = 0$ with the coordinate

axes.

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2. Find the equation of the straight line passing through the point $(-2, 4)$ and making intercepts ,whose sum is zero .

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3. Find the angle between the planes 2x - y + z = 6 and x + y + 2 z = 7 .

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4. 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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5. Compute

$$\text{Lt}_{x \to 0} \frac{a^x - 1}{b^x - 1}, (a > 0, b > 0, b \neq 1)$$

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6. Show that $Lt_{x \to 0+}\left(\frac{2|x|}{x}+x+1\right)=3.$

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7. IF $y-\tan^{-1}\left(\frac{2x}{1-x^2}\right)$, find $\frac{dy}{dx}$.

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8. If $y=ae^{nx}+be^{-nx}$, then prove that $y''=n^2y.$

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9. If $y = x^2 + x, x = 10, \Delta x = 0.1,$ then find Δy and dy

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

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

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12. When the axes are rotated through an angle $\pi/6$. Find the transformed equation of $x^2 + 2\sqrt{3}xy - y^2 = 2a^2$.

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13. Find the points on the line $3x - 4y - 1 = 0$ which are at a distance of 5 units from the point (3,2).

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14. 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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15. Find the derivative of $x \sin x$ from the first principle.

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16. 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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17. A particle is moving in a straight line so that after 't' seconds its distance is 'S' (in cms) from a fixed point of the line is given be S=f(t)= $8t + t^3$.

Find (i) the velocity at time t=2 (ii) the initial velocity (iii) acceleration at t=2 sec

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

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19. 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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20.

$$y = x\sqrt{a^2 + x^2} + a^2 \log\left(x + \sqrt{a^2 + x^2}\right),$$

then show that $\frac{dy}{dx} = 2\sqrt{a^2 + x^2}$

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21. Find the positive integers x and y such that $x + y = 60$ and xy^3 is maximum.

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22. 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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