



MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

IPE:MARCH-2019(AP)

Section A

1. Find the angle which the straight line

$y = \sqrt{3}x - 4$ makes with the Y-axis.



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2. Find the distance between the parallel lines

$$3x + 4y - 3 = 0 \text{ and } 6x + 8y - 1 = 0$$



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3. The distance between the points $(5, -1, 7)$ and

$(c, 5, 1)$ is 9 then $c =$



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4. Write the equation of the plane $4x - 4y + 2z + 5 = 0$ in the intercept form.

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5. Evaluate $\lim_{x \rightarrow 0} \left(\frac{e^{3+x} - e^3}{x} \right)$

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6. Evaluate $\lim_{x \rightarrow 3} \frac{x^2 + 3x + 2}{x^2 - 6x + 9}$

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7. Find the derivatives of the function

$$\tan^{-1}(\log x)$$



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8. If $y = \frac{2x + 3}{4x + 5}$ then find y'' .



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9. Find the absolute extremum of $f(x) = x^2$ is defined on $[-2,2]$



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Section B

1. A(5,3) and B(3,-2) are 2 fixed points. Find the equation of locus of P, so that the area of $\triangle PAB$ is 9sq. Units.



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2. The point to which the origin is shifted and the transformed equation are given below.

Find the original equation.

$$(3, -4) : x^2 + y^2 = 4$$



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3. If the straight lines

$$ax + by + c = 0, bx + cy = a = 0 \quad \text{and}$$

$cx = ay + b = 0$ are concurrent, then prove

$$\text{that } a^3 + b^3 + c^3 = 3abc$$



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4. Find $\lim_{x \rightarrow a} \left(\frac{x \sin a - a \sin x}{x - a} \right)$



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



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6. Find the approximate value of $\sqrt[3]{999}$



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7. The distance-time formula for the motion of a particle along a straight line is $s = t^3 - 9t^2 + 24t - 18$. Find when and where the velocity is zero.



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1. A : The image of the origin with respect to the line $x + y + 1 = 0$ is $(-1, -1)$

R : If (h, k) is the image of (x_1, y_1) with respect to the line $ax + by + c = 0$ then

$$\frac{h - x_1}{a} = \frac{h - k_1}{b} = \frac{-2(ax_1 + by_1 + c)}{a^2 + b^2}$$



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

the distance between the parallel lines is

$$2\sqrt{\frac{g^2 - ac}{a(a+b)}} \quad \text{or} \quad 2\sqrt{\frac{f^2 - bc}{b(a+b)}}.$$



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3. Find the value of k , if the lines joining the origin with the points of intersection of the curve $2x^2 - 2xy + 3y^2 + 2x - y - 1 = 0$ and the $x + 2y = k$ are mutually perpendicular.



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4. Find the angle between the lines whose d.c's are related by

$$l + m + n = 0 \text{ \& } l^2 + m^2 - n^2 = 0$$



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5.

If

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

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



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6. Find the points of local extrema for the function

$$f(x) = \cos 4x \text{ defined on } \left[0, \frac{\pi}{2}\right]$$



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