



MATHS

BOOKS - TELUGU ACADEMY MATHS (TELUGU ENGLISH)

TRANSFORMATION OF AXES

1 D Saq

1. When the origin is shifted to $(-1,2)$ by the translation of axes, find the transformed

equation $x^2 + y^2 + 2x - 4y + 1 = 0$.



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



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3. When the origin is shifted to the point $(2, 3)$ the transformed equation of a curve is

$x^2 + 3xy - 2y^2 + 17x - 7y - 11 = 0$. Find the original equation of curve.



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4. The point to which the origin is shifted and the transformed equation are given below. Find the original equation.

$$(-1, 2), x^2 + 2y^2 + 16 = 0$$



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5. When the origin is shifted to the point (3,-4), the transformed equation of a curve is $x^2 + 2y^2 = 4$. Find the original equation.



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6. Prove that the angle of rotation of the axes to eliminate xy term from the equation

$$ax^2 + 2hxy + by^2 = 0 \text{ is } \tan^{-1} \left(\frac{2h}{a-b} \right)$$

where $a \neq b$ and $\frac{\pi}{4}$ if $a = b$.



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7. 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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8. Find the transformed equation of $x^2 + 2\sqrt{3}xy - y^2 = 2a^2$ when the axes are rotated through an angle 30° .



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9. Find the transformed equation of

$3x^2 + 10xy + 3y^2 = 9$ when the axes are rotated through an angle $\frac{\pi}{4}$



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10. When the axes are rotated through an angle 45° , the transformed equation of a curve is $17x^2 - 16xy + 17y^2 = 225$. Find the original equation of the curve.



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2 D Saq

1. Find the point to which the origin has to be shifted to eliminate x and y terms in the equation $4x^2 + 9y^2 - 8x + 36y + 4 = 0$



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2. Find the angle through which the axes be rotated to remove the xy term from the

equations

$$x^2 + 4xy + y^2 - 2x + 2y - 6 = 0$$



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