MATHS

BOOKS - VIKRAM PUBLICATION (ANDHRA PUBLICATION)

TRANSFORMATION OF AXES

Solved Problems

1. The origin is shifted to (2,3) by the translation of axes. If a point P has changed as

(i) (4, -3), find the coordinates of P in the original system.

(ii) (4, 5), find the coordinates of P in the original system.

Watch Video Solution

2. Find the point to which the origin is to be shifted by the translation of axes so as to remove the first degree terms from the equation

$ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0.$

where $h^2 \neq ab.$

View Text Solution

3. Find the point to which the origin is to be shifted by the translation of axes so as to remove the first degree terms from the equation

$ax^2 + by^2 + 2gx + 2fy + c = 0,$ where $a \neq 0, b \neq 0.$

View Text Solution

4. If the coordinates of a point P changes to (2,-6) when the coordinate axes are rotated through an angle of 135°, then the coordinates of P in the original system are

Watch Video Solution

5. Show that the axes are to be rotated through an angle of $\frac{1}{2}\tan^{-1}\left(\frac{2h}{a-b}\right)$ so as to remove the xy term from the equaton

$ax^2 + 2hxy + by^2 = 0$, if $a \neq b$ and through the angle $\frac{\pi}{4}$, if a =b.

View Text Solution

6. When the origin is shifted to (-2,-3) and the axes are rotated through an angle 45^0, find the transformed equation of $2x^2 + 4xy - 5y^2 + 20x - 22y - 14 = 0$.

Watch Video Solution

7. When the origin is shifted to $(-2, 3)$ by translation of axes, let us find the coordinates of $(1, 2)$ with respect to new axes.

Watch Video Solution

8. When the origin is shifted to $(3, 4)$ by the translation of axes, let us find the transformed equation of $2x^2 + 4xy + 5y^2 = 0$.

Watch Video Solution

Textual Exercises Exercise 2 A

1. When the origin is shifted to (4,-5) by the translation of axes, find the coordinates of the point (0,3) with reference to the new axes.

Watch Video Solution

2. When the origin is shifted to (4, -5) by the translation of axes, find the coordinates of the point

(i) (-2, 4) with reference to new axes.

(ii) (4, -5) with reference to new axes.

Watch Video Solution

3. When the origin is shifted to (4, -5) by the translation of axes, find the coordinates of the point

(i) (-2, 4) with reference to new axes.

(ii) (4, -5) with reference to new axes.

Watch Video Solution

4. The origin is shifted to (2,3) by the translation of axes. If a point P has changed as

(i) (4, -3), find the coordinates of P in the original system.

(ii) (4, 5), find the coordinates of P in the original system.

Watch Video Solution

5. The orgin is shifted to $(2, 3)$ by the translation of axes. If the coordinates of a point P changes as follows, find the

coordinates of P in the original system,

$(-4, 3)$

Watch Video Solution

6. The origin is shifted to (2, 3) by the translation of axes. If a point P has changed as (0, 0), find the coordinates of P in the original system.

Watch Video Solution

7. Find the point to which the origin is to be shifted so that the point (3, 0) may change to (2,-3)

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

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

Watch Video Solution

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

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

Watch Video Solution

12. The point to which the origin should be shifted in order to eliminate x and y terms in the equation $4x^2 + 9y^2 - 8x + 36y + 4 = 0$ is

Watch Video Solution

13. When the axes are rotated through an angle 30°, find the new coordinates of the point

$(0, 5)$

Watch Video Solution

14. (i) If the axes are rotated through an angle 30^0, then find the coordinates of (1,2) in the new system .

(ii) If the axes are rotated through an angle 30^0, then find the coordinates of (-2, 4) in the new system.

(iii) When the axes are rotated through an angle $\frac{\pi}{2}$, find the new coordinates of the point $(\alpha, 0)$

Watch Video Solution

15. When the axes are rotated through an angle 30°, find the new coordinates of the

point

$(0, 0)$

Watch Video Solution

16. When the axes are rotated through an angle 60°, the new - co-ordinnates of the point are the

$(3, 4)$

Watch Video Solution

17. When the axes are rotated through an angel 60°, the new - co-ordinnates of three point are the

$(-7, 2)$

Watch Video Solution

18. When the axes are rotated through an angel 60°, the new - co-ordinnates of three point are the

$(2, 0)$

Watch Video Solution

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

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

Watch Video Solution

20. 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.

Watch Video Solution

21. 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.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

24. When the axes rotated through an angegle $\frac{\pi}{4}$, find the transformed equation of $3x^2 + 10xy + 3y^2 = 9.$

Watch Video Solution