

Assignment Problems

1. Verify that the equation $3x^2 + 6y^2 - 12x + 12y + 18 = 0$ transformed to an equation that contains only terms of the second degree.
2. If the lines represented by $2x^2 - 5xy + 2y^2 = 0$ be two sides of a parallelogram and the line $5x + 2y = 1$ be one of its diagonals, find the equation of the other diagonal and area of the parallelogram.
3. Find the combined equation of the lines passing through the origin, one of which is parallel and other is perpendicular to the line $5x - 3y + 1 = 0$.
4. Find the point of intersection of the pair of straight lines given by the equation $x^2 -$

$-y^2 - 3x + 3y = 0$. Hence find the area of the triangle formed by these lines and the y -axis.

5. Verify that the circles

$$x^2 + y^2 - 4x - 7y + 6 = 0$$

$$x^2 + y^2 + 3x - 14y - 1 = 0 \quad \text{and}$$

$$3(x^2 + y^2) + 2x - 35y + 4 = 0$$

have a common radical axis.

6. Obtain the equation of the circle which cuts orthogonally the circle $x^2 + y^2 - 6x + 4y - 3 = 0$, passes through $(3, 0)$ and touches the y -axis.