

## HOME ASSIGNMENT-1

FYUGP: B.SC.-4<sup>TH</sup> Semester

Subject: Mathematics (Major & Minor)

**Paper: MAT4400304MJ & MAT4400304MN**

Marks-20

Assignment Date: 16-04-2026

Date of Submission: 23-04-2026

1. Show that the equation  $x^2 - 2xy + y^2 + x - 3y = 0$  by transferring to axes through the point  $(-1, 0)$  inclined at an angle  $45^\circ$  with the original axes becomes  $\sqrt{2}y^2 - x = 0$ .

2. If the equation  $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$  represents two straight lines, prove that the square of the distance of their point of intersection from the origin is  $\frac{c(a+b) - f^2 - g^2}{ab - h^2}$

3. Show that the area of the triangle formed by the lines  $ax^2 + 2hxy + by^2 = 0$  and  $lx + my + n = 0$  is

$$\frac{n^2 - \sqrt{h^2 - ab}}{am^2 - 2hlm + bl^2}$$

4. Find the Centre, eccentricity and foci of the ellipse  
 $2x^2 + 3y^2 - 4x + 5y + 4 = 0$

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