**Assignment 3**

1. What do you mean by a Homogeneous Coordinate Transformation? Explain about Shear transformation in X and Y-direction.
2. How can you perform a 2D-reflection about the line y=mx+c? Explain the required steps with necessary derivation.
3. We have a triangle ABC with vertices A (3, 4), B (7, 4) and C (5, 8) on the screen. Find the new transformed triangle when the triangle is magnified twice the size keeping a point (-3,-4) constant.
4. The vertices of a triangle are given to be A (8, 7), B (10, 6) and C (8, 4).
   1. Translate the triangle so that the vertex A is (1, 9).
   2. For the translated triangle in 4 (a), get the vertices of the reflected image of the triangle, the axis of the reflection is y=x+3.
   3. For the reflected image of the triangle computed in 4(b), rotate it 450 clockwise about the point (2, 2).
   4. Taking X-direction shearing factor shx=0.5, perform the x-direction shear relative to yref =1, for the rotated triangle computed in 4(c).

5. Find the coordinate of a triangle (5, 5), (7, 3), (3, 3) after translating by (1, 0) and then reflect by x=0 line.