**Tutorial – 5**

**Computer Graphics**

1. **Prove that 2D rotation and scaling are commutative if Sx = Sy OR Ɵ=nπ.**
2. **Consider the square A(1,0), B(0,0), C(0,1) and D(1,1). Rotate the square ABCD by 45° clockwise about A(1,0).**
3. **The reflection along the line y=x is equivalent to the reflection along the X-axis followed by counter clockwise rotation by Ɵ degrees. Find the value of Ɵ.**
4. **Show that the 2 x 2 matrix**

**[T]= represents pure rotation**

1. **Show that transformation matrix for a reflection about y = -x is equivalent to reflection relative to the y axis followed by a counter clockwise rotation by 90°.**
2. **Prove that two 2D rotations above the origin are commutative i.e. R1R2=R2R1.**
3. **Prove that two scaling transformations are commutative i.e. S1S2=S2S1.**
4. **The 2D reflection through x axis followed by a 2D reflection through the line y=-x is equivalent to rotation about origin by Ɵ degrees. Find the value of Ɵ.**