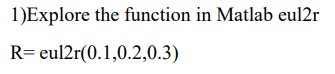
**22AIE214 – INTRODUCTION TO ROBOTICS**

**LABSHEET 5**

**Name : thazhai mugunthan**

**Roll no: AM.EN.U4AIE22051**

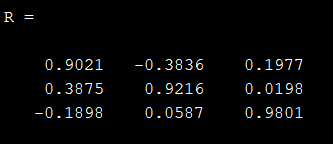
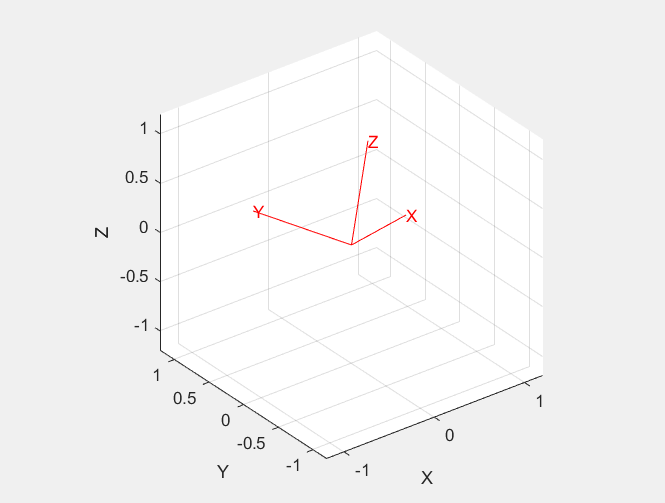
****

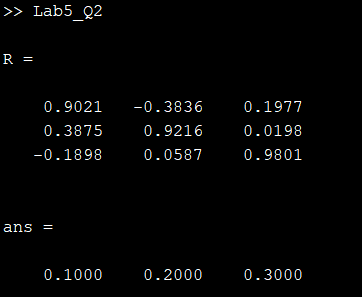
**CODE :**

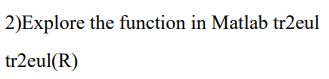
**R = eul2r(0.1,0.2,0.3)**

**trplot(R, 'color', 'r');**

**view(3);**

** **

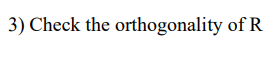
****

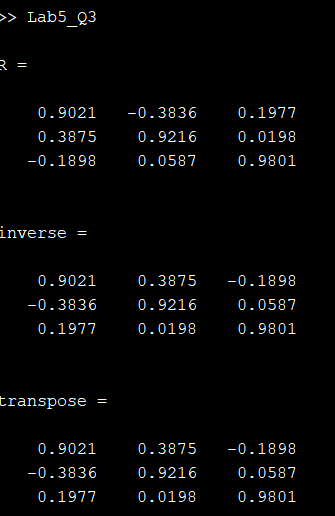
****

**CODE :**

**R= eul2r(0.1,0.2,0.3)**

**tr2eul(R)**

****

****

**CODE :**

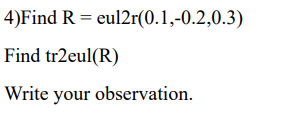
**R = eul2r(0.1,0.2,0.3)**

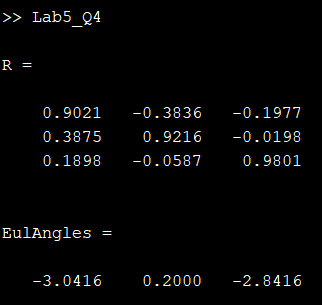
**inverse = inv(R)**

**transpose = R'**

Orthogonal matrices follow property : A-1 = AT

Here R-1 = RT, therefore matrix R is orthogonal

****

****

**CODE :**

R = eul2r(0.1,-0.2,0.3)

EulAngles = tr2eul(R)

**Observation :**

Euler angles can be converted from quaternions using functions like eul2r(phi, theta, psi) and tr2eul(R). Since quaternions are based on periodic functions such as sine and cosine, their values fall within the range [0, 2π]. If the input values exceed this range, converting to quaternions and then back to Euler angles might not give you the original angles, because quaternions will always convert to values within 0 to 2π.