Lab sheet 3

Q1)

(a) What is the significance of Homogeneous transformation (HT) in 2D space?

(b) Configure the H.T. of *frame{B}* for translation (2, 3) and rotation angle of 30◦ with respect to *frame{A}* [in matlab]

*Hint:*

*transl2(2,3)*trot2(30,"deg";*

*display*

*trplot2(variable,'frame','B','color','g');*

Q2)The set of roll-pitch-yaw angles (30, 90, -20)° can be converted to a rotation matrix. Find the result if the matrix is converted back to roll-pitch-yaw angles. Plot the points using matlab.

*Hint:*

*R=rpy2r(30,90,-20,'deg');*

*disp(R)*

*disp(tr2rpy(R,'deg'))*

*plot(R)*

3) Justify the statement that "Rotations are non-commutative in 3D".

Instruction: Show the matlab operations with example. You can put snapshots in your answer sheet and give relevant explanation.