Pop Quiz (Week 4) [15 mins] – 15 pts

Name: ____________________________ Student ID: ____________________________

Please show your work for partial credits.

1) [1] The dimension of matrices that can represent all 3D linear transformations is ________________

2) [2+1=3] What are the two fundamental rigid body transformations? How many degrees of freedom do they have?

3) [3+3=6] Write the 4x4 matrix for following concatenated transformations.
   a) $R_z(45^\circ) \ T(1,2,1)$

   b) $S(1,2,1) \ R_z(45^\circ)$

4) [5] Consider a view set up where the eye is located at the origin, the normal to the image plane is given by the vector (0, 1, 1), and the view-up vector is given by (1, 1, 0). Find the view transformation.