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Pop Quiz (Week 3) [10 mins] – 14 pts

1) [3+3=6] Write the 4x4 matrix for following concatenated transformations.

a) $R_z(45^\circ) T(1,2,1)$

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

2) [5] Consider a view setup 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.

3) [1+1+1=3] Mark all the correct answers for each of following questions.

a) A rigid body transformation:

- i. Preserves lines as lines
- ii. Preserves lengths and angles
- iii. Preserves ratios of lengths and angles
- iv. Can turn parallel lines to intersecting and vice versa

b) An affine transformation:

- i. Preserves lines as lines
- ii. Preserves lengths and angles
- iii. Preserves ratios of lengths and angles
- iv. Can turn parallel lines to intersecting and vice versa

c) A projective transformation:

- i. Preserves lines as lines
- ii. Preserves lengths and angles
- iii. Preserves ratios of lengths and angles
- iv. Can turn parallel lines to intersecting and vice versa