

Pop Quiz 4 [10 mins]

Name: _____

Student ID: _____

1. [2] Consider a 2D square of unit length and center (2,2). Which of the following transformations will achieved a scaling of 2 and 3 in X and Y direction respectively?

☐ $T(2,2)S(3,2)T(-2,-2)$
☐ $T(-2,-2)S(3,2)T(2,2)$
☒ $T(2,2)S(2,3)T(-2,-2)$

2. [2] A sphere needs to be rotated by 45 degrees about the y axis, followed by a translation of (1,1,1), followed by a scaling of 2 in Z-direction. The combined transformation is given by

☐ $R_y(45)T(1,1,1)S(0,0,2)$
☐ $R_y(45)T(1,1,1)S(1,1,2)$
☒ $S(1,1,2)T(1,1,1)R_y(45)$
☐ $S(0,0,2)T(1,1,1)R_y(45)$
☐ $T(1,1,1)S(1,1,2)R_y(45)$
☐ $T(1,1,1)S(0,0,2)R_y(45)$

3. [1] Which of the following gives the homogeneous coordinate of a vector with direction (x,y)?

☐ (x, y, 1)
☒ (x, y, 0)
☐ (kx, ky, 1)
☒ (kx, ky, 0)

4. [5] Match the transformations in the left with the descriptions in the right.

Non-Linear Transformations	Do not change length and angles
Affine Transformations	Do not change degree of curves or surfaces
Euclidian Transformations	Do not change the ratio of lengths and angles
Projective Transformation	Can change the degree of curves and surfaces
Linear Transformation	Can change parallel line to intersecting lines