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Announcements

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## Unit 4 - Week 2

### Course outline

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#### Week 1

#### Week 2

- Geometric modeling
- Transforming models
- Matrix algebra and 2D rotations
- 3D rotations and yaw, pitch, and roll
- 3D rotations and yaw, pitch, and roll, contd
- Axis-angle representations
- Quaternions
- Quiz : Assignment 2a
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## Assignment 2a

The due date for submitting this assignment has passed.

**Due on 2018-02-07, 23:59 IST.**

### Submitted assignment

1) All 3 vertices of a triangle went through rotation and translation in 2 dimensions, then how many degree of freedoms will be there 1 point

- 1
- 2
- 3
- 6

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

3

2) All 3 vertices of a triangle went through rotation and translation in 3 dimensions, then how many degree of freedoms will be there 1 point

- 2
- 4
- 3
- 6

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

6

3) 1 point

In 2D linear transformations, the value of transformation matrix  $\begin{pmatrix} m_{11} & m_{12} \\ m_{21} & m_{22} \end{pmatrix}$  is given as  $\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$ . Find out the effect on the system.

- Rotated by  $2\pi$
- Rotated by  $\pi$
- Translated by same length
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

Rotated by  $\pi$

4) 1 point

In the above question if the value of transformation matrix is given as  $\begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix}$ , then Find out the effect on the transformation.

- No effect

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- Rotation by  $\pi$
- Mirror image
- Scaling(stretch)

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Scaling(stretch)*

5)

1 point

Quaternions are the best representation of 3D rotation, it is represented as

$$q = (a, b, c, d) \in \mathbb{R}^4 \text{ where } a^2 + b^2 + c^2 + d^2 = 1$$

if the quaternions are given as  $q = (0, 0, 0, 1)$ , then find out the nature of the rotation.

- Roll by  $\pi$
- Pitch by  $\pi$
- Yaw by  $\pi$
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Roll by  $\pi$*

6)

1 point

In the above question if the value of quaternions are given as  $q = (\frac{1}{\sqrt{2}}, 0, \frac{1}{\sqrt{2}}, 0)$ , Then find out the nature of the rotation.

- Pitch by  $\pi/2$
- Yaw by  $\pi/2$
- Roll by  $\pi/2$
- Pitch by  $\pi$

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Yaw by  $\pi/2$*

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