socrative

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3D Geometry Objects

15.38% (4/26)

1. What is the name of 2 presenters today?

1/1 POINT

A Nguyen Duc Anh Phuc & Ngo Van Tan Luu
B Ngo Van Tan Luu & Huynh Viet Tuan Kiet
C Nguyen Duc Anh Phuc & Truong Thanh Thang
D Huynh Viet Tuan Kiet & Nguyen Duc Anh Phuc
E Ngo Van Tan Luu & Truong Thanh Thang

2. Which is a correct statement?

0/2 POINTS

A 3 collinear points are 3 points in only one plane
B There is only one plane going through 3 collinear points
C 3 coplanar points may not be collinear
D 3 points that are not collinear are definitely not coplanar

3. Why must use matrices in order to represent linear transformations?

0/3 POINTS

A Matrices allow arbitrary linear transformations to be displayed in a consistent format suitable for computation

B Matrices are easily represented as a computer data structure
C The transformation represented as a matrix M can be undone by applying the inverse of the matrix M^{-1}
D Every linear transformation is a matrix transformation
E Both A, B, D are correct
F A and C are correct
G Both A, B, C are correct
H Both A, B, C, D are correct
I B and C are correct

4. Square matrices are used so that we can perform all transformations using matrix **multiplications.**

1/1 POINT

$$\begin{bmatrix} 1 & 0 & 0 & T_X \\ 0 & 1 & 0 & T_Y \\ 0 & 0 & 1 & T_Z \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

T True

F False

5. Based on the equation, which is the matrix that rotates around the Oy axis?

0/3 POINTS

$$X' = X \times \cos\theta + Z \times \sin\theta$$

$$Y' = Y$$

$$Z' = -X \times \sin\theta + Z \times \cos\theta$$

$$\rightarrow \begin{bmatrix} X' \\ Y' \\ Z' \\ 1 \end{bmatrix} = [?] \times \begin{bmatrix} X \\ Y \\ Z \\ 1 \end{bmatrix}$$

A $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos\theta & -\sin\theta & 0 \\ 0 & \sin\theta & \cos\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

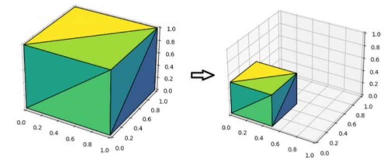
B $\begin{bmatrix} \cos\theta & 0 & \sin\theta & 0 \\ 0 & 1 & 0 & 0 \\ -\sin\theta & 0 & \cos\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

C $\begin{bmatrix} \cos\theta & 0 & -\sin\theta & 0 \\ 0 & 1 & 0 & 0 \\ -\sin\theta & 0 & \cos\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

D $\begin{bmatrix} \sin\theta & 0 & \cos\theta & 0 \\ 0 & 1 & 0 & 0 \\ -\cos\theta & 0 & \sin\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

6. Which matrix represents this 3D scaling transformation visualization?

0/3 POINTS



A $S = \begin{bmatrix} \frac{1}{2}, 0, 0, 0 \\ 0, \frac{1}{2}, 0, 0 \\ 0, 0, \frac{1}{2}, 0 \\ 0, 0, 0, 0 \end{bmatrix}$

B $S = \begin{bmatrix} 2, 0, 0, 0 \\ 0, 2, 0, 0 \\ 0, 0, 2, 0 \\ 0, 0, 0, 1 \end{bmatrix}$

C $S = \begin{bmatrix} 1, 0, 0, 0 \\ 0, 1, 0, 0 \\ 0, 0, 1, 0 \\ 0, 0, 0, \frac{1}{2} \end{bmatrix}$

D $S = \begin{bmatrix} \frac{1}{2}, 0, 0, 0 \\ 0, \frac{1}{2}, 0, 0 \\ 0, 0, \frac{1}{2}, 0 \\ 0, 0, 0, \frac{1}{2} \end{bmatrix}$

E $S = \begin{bmatrix} 1, 0, 0, 0 \\ 0, 1, 0, 0 \\ 0, 0, 1, 0 \\ 0, 0, 0, 2 \end{bmatrix}$

F $S = \begin{bmatrix} 2, 0, 0, 0 \\ 0, 2, 0, 0 \\ 0, 0, 2, 0 \\ 0, 0, 0, \frac{1}{2} \end{bmatrix}$

7. What transformation does this matrix perform?

$$\begin{bmatrix} X' \\ Y' \\ Z' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} X \\ Y \\ Z \\ 1 \end{bmatrix}$$

2/2 POINTS

A Reflection through the XY plane

B Reflection through the YZ plane

C Reflection through the XZ plane

8. What transformation does this matrix perform?

$$\begin{bmatrix} X' \\ Y' \\ Z' \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \times \begin{bmatrix} X \\ Y \\ Z \\ 1 \end{bmatrix}$$

0/3 POINTS

A Rotation around the Ox axis 90 degrees

B Rotation around the Oy axis 90 degrees

C Rotation around the Oz axis 90 degrees

9. Which of the following coordinate performs the translation $(2,4,5)$ and rotates about the z-axis at an angle of 90 degrees at the point $(1,1,1)$?

0/3 POINTS

A $(5,3-6)$

B $(-5,3,6)$

C $(-3,3,6)$

D $(3,3,-6)$

10. Which of the following matrices performs the reflection $(2,4,5)$through the YZ plane and shear in the X directions with the parameter $(0,4,7)$ degrees at any point?

0/5 POINTS

A
$$S=\begin{bmatrix}-1,0,0,0\\-4,1,0,0\\-7,0,1,0\\0,0,0,1\end{bmatrix}$$

B
$$S=\begin{bmatrix}-1,0,0,0\\4,1,0,0\\7,0,1,0\\0,0,0,1\end{bmatrix}$$

C
$$S=\begin{bmatrix}-1,0,0,0\\-4,1,0,0\\7,0,1,0\\0,0,0,1\end{bmatrix}$$

D
$$S=\begin{bmatrix}-1,0,0,0\\4,1,0,0\\-7,0,1,0\\0,0,0,1\end{bmatrix}$$