socrative

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3D Geometry Objects

57.69% (15/26)

✓ **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?

2/2 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

T True

F False

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

3/3 POINTS

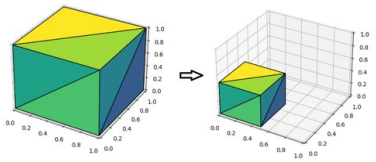
A $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & \cos\theta & -\sin\theta & 0 \\ 0 & \sin\theta & \cos\theta & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

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?

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

3/3 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 $(1, 1, 1)$?

3/3 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 $S = \begin{bmatrix} -1, 0, 0, 0 \\ 4, 1, 0, 0 \\ -7, 0, 1, 0 \\ 0, 0, 0, 1 \end{bmatrix}$