

Quiz 1

Due Feb 4 at 11:59pm **Points** 10 **Questions** 10
Available until Feb 4 at 11:59pm **Time Limit** None

Instructions

You have one attempt.

Questions might have more than one correct answer.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	1,041 minutes	8.17 out of 10

⚠ Correct answers will be available on Feb 5 at 12am.

Score for this quiz: **8.17** out of 10

Submitted Feb 3 at 2:09pm

This attempt took 1,041 minutes.

Question 1

1 / 1 pts

How much of the total grade are the quizzes worth?

☒ 15%

☐ 20%

☐ 10%

☐ 5%

Question 2**1 / 1 pts**

A rigid body can:

- ☒ Rotate
- ☐ Change its shape
- ☐ Change its volume
- ☒ Translate

Question 3**1 / 1 pts**

The addition of two elements of a vector space is an element belonging to the same vector space.

- ☒ True
- ☐ False

Question 4**1 / 1 pts**

The product of an element of a vector space with a scalar is an element belonging to the same vector space.

- ☒ True
- ☐ False

Question 5**1 / 1 pts**

A basis is made of vectors that must be mutually orthogonal.

☐ True

☒ False

Partial**Question 6****0.5 / 1 pts**

In a 3-D space, an orthonormal reference frame is characterized by:

☐ An origin

☐ A length between two points.

☒ A set of 3 linearly independent, mutually orthogonal versors.

☐ Any basis of the 3-D space.

Question 7**1 / 1 pts**

Given a skew-symmetric matrix A , which statement is always true?

(A' indicates the transpose of A ; $\text{inv}(A)$ indicates the inverse of A)

☐ $A = \text{inv}(A)$

☒ $A = -A'$

☐ $A = \text{inv}(A')$

☐ $A = A'$ **Question 8****1 / 1 pts**

The coordinate transformation matrix R_{BI} :

☐ Is skew-symmetric☒ Is orthogonal☒ Allows us to go from the I-RF coordinates to the B-RF coordinates.☒ Is also known as Direction Cosine Matrix**Incorrect****Question 9****0 / 1 pts**

Consider a 3-D Coordinate Transformation Matrix R_{BI} . How many unique combinations of successive, independent elementary rotation matrices (R_1 , R_2 , R_3) can we use to build R_{BI} ?

☒ 6☐ 9☐ 3☐ 12**Partial****Question 10****0.67 / 1 pts**

A coordinates transformation from I-RF to B-RF can always be obtained performing the following sequences of elemental rotations:

☒ 1-2-1

☒ 3-1-3

☐ 2-3-1

☐ 2-2-1

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