Quiz 9

Multiple Choice

1/1 point (graded)

What is the length of $\vec{u}$ such that $\vec{u} = \frac{\vec{v}}{\|\vec{v}\|}, \vec{v} = (2, 3, 7)$?

- 1 ✔
- 3.61
- 7.84
- 62

Answer
Correct: Video: Review of Linear Algebra

Submit

Answers are displayed within the problem

True or False

1/1 point (graded)

If every vector in an orthonormal basis is orthogonal to each other, this implies that there can be one and only one vector for each dimension of the vector space in this set.

- (•) True ✔
- ( ) False

Answer
Correct: Video: Review of Linear Algebra

Submit

Answers are displayed within the problem

True or False

1/1 point (graded)
An inner produce, such as the dot product, always uses two vectors as operands and produces a scalar number as the result.

- (•) True ✔
- ( ) False

Answer
Correct: Video: Review of Linear Algebra

Submit

Answers are displayed within the problem

Multiple Choice

1/1 point (graded)

$\begin{bmatrix} 4 & 1 \end{bmatrix}$

Given a matrix, $A = \begin{bmatrix} & \\ 1 & 9 \end{bmatrix}$, find $(4A)^{-1}$.

- $(4A)^{-1} = \begin{bmatrix} 1 & -\frac{1}{9} \\ -\frac{1}{9} & \frac{4}{9} \end{bmatrix}$
- $(4A)^{-1} = \begin{bmatrix} \frac{9}{140} & -\frac{1}{140} \\ -\frac{1}{140} & \frac{1}{35} \end{bmatrix}$ ✔
- $(4A)^{-1} = \begin{bmatrix} \frac{1}{16} & \frac{1}{4} \\ \frac{1}{4} & \frac{1}{36} \end{bmatrix}$
- $(4A)^{-1} = \begin{bmatrix} \frac{1}{36} & -\frac{1}{4} \\ -\frac{1}{4} & \frac{1}{16} \end{bmatrix}$

Answer
Correct: Video: Matrices Notations and Operations

Submit

Answers are displayed within the problem

True or False

1/1 point (graded)
A mxn matrix can be added with a nxm matrix, but they cannot be multiplied. (Assume $m \neq n$)

- True
- False ✔

Answer

Correct: Video: Matrices Notations and Operations

Submit

Answers are displayed within the problem

Multiple Choice

5/5 points (graded)
Given the matrix A below, answer the following questions:

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

a) $4A + 4A = ?$

- $4A$
- $8A$ ✔
- $16A$
- Cannot add two matrices of the same dimension

Answer
Correct: Video: Matrices Notations and Operations

b) $A - 2 = \begin{bmatrix} a_{11} - 2 & a_{12} - 2 \\ a_{21} - 2 & a_{22} - 2 \end{bmatrix}$

- True ✔
- False

Answer

Correct: Video: Matrices Notations and Operations

c) $A^{-1} = \frac{1}{A}$

- True
- False ✔

Answer
Correct: Video: Matrices Notations and Operations

d) $(A^T)\, I = ?$

- A
- A^T ✔
- 1
- A^{-1}

Answer
Correct: Video: Matrices Notations and Operations

e) $(A^T)^T = A$

- True ✔
- False

Answer
Correct: Video: Matrices Notations and Operations

Submit

Answers are displayed within the problem

Checkboxes

1/1 point (graded)

If $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is an identity matrix, which of the following statements are true?

- [x] $AI = A$ ✔
- [x] $IA = A$ ✔
- [ ] $I + A = A$
- [x] $AI^T = A$ ✔

✔

Answer
Correct:
Video: Matrices Notations and Operations
Video: Matrices Notations and Operations
Video: Matrices Notations and Operations
Video: Matrices Notations and Operations

Submit

Answers are displayed within the problem

True or False

1/1 point (graded)

When a system has more dimensions than points, it is called an “overdetermined system”.

- True
- False ✔

Answer
Correct: Video: Systems of Linear Equations

Submit

Answers are displayed within the problem

True or False

1/1 point (graded)
The purpose of linear regression is to find a line that most closely matches a set of data with multiple data points.

- True ✔
- False

Answer
Correct: Video: Linear Regression

Submit

Answers are displayed within the problem