Online Test 2, 2018 Semester 2 Results for Sicong Wu

Score for this quiz: **80** out of 100
Submitted Sep 1 at 19:04
This attempt took 27 minutes.

Question 1

10 / 10 pts

Given $C = AB$ where A is an $n \times m$ matrix and B is $m \times k$ matrix. Which of the following is the dimension/size of C?

- $m \times k$
- $n \times m$
- None of these
- $m \times n$
- **Correct!** $n \times k$

Question 2

10 / 10 pts

Let D be a matrix of size $k \times j$. Which of the following is the size of D^T ?

- $j \times j$
- $k \times j$
- D may have no transpose
- **Correct!** $j \times k$
- None of these

Question 3

0 / 10 pts

Given the matrix

$$A = \begin{bmatrix} 3 & 3/2 & 1 \\ 1/2 & 0 & 1/2 \\ 2 & 1/2 & 1 \end{bmatrix}$$

which of the following is **incorrect**?

orrect Answer

- A is not invertible

- None of these

ou Answered

- $A^{-1} = \begin{bmatrix} -1 & -4 & 3 \\ 2 & 4 & -4 \\ 1 & 6 & -3 \end{bmatrix}$

- $(A^{-1})^{-1} = A$

Question 4

10 / 10 pts

Which of the following is closest about the length of vector $v = (2, -3, 14)$?

- $\|v\| = 13$

- $\|v\| = \sqrt{191}$

Correct!

- $\|v\| = \sqrt{209}$

- $\|v\| = 19$

Question 5

10 / 10 pts

Given the vector $v = (3, -2, 1)$ which of the following is orthogonal to v?

- $(-3, 2, -1)$
- $(-1, 2, -3)$
- None of these

Correct!

- **$(2, 4, 2)$**
- $(1, -2, 3)$

Question 6

10 / 10 pts

Given two points in the plane $A(1, 3, 0)$ and $B(4, 1, 0)$ which of the following best represents the vector going from A to B?

- $5\mathbf{i} + 7\mathbf{j}$
- $\sqrt{17}\mathbf{i} + \sqrt{10}\mathbf{j}$
- $-3i + 2j$

Correct!

- **$3\mathbf{i} - 2\mathbf{j}$**

Question 7

10 / 10 pts

Given the matrix $A = \begin{bmatrix} 3 & 2 & 4 \\ 1 & 2 & 5 \\ 4 & 1 & 2 \end{bmatrix}$.

Which of the following is closest to $\det(A^T A)$ -- the determinant of $A^T A$?

Correct!

- (•) 25
- ( ) 5
- ( ) 1600
- ( ) A matrix with -0.2, -2.0 and 0.8 on the diagonal

Question 8

0 / 10 pts

Given vectors $a = (1, 1, 0)$ and $b = \left(1, 1, \sqrt{6}\right)$.

Which of the following is correct?

orrect Answer

- ( ) the angle between a and b is $60°$ (or $\frac{\pi}{3}$ radians)
- ( ) a is orthogonal to b

ou Answered

- (•) none of these
- ( ) a is parallel to $a + b$

Question 9

10 / 10 pts

Given three vectors

$\boldsymbol{a = 3i - 2j + k; b = 2i - 3j + k; c = -9i + 6j - 3k}$

Which of the following statements are true?

- b and c are parallel
- None of these are true
- a and b are parallel

Correct!

- a and c are parallel
- a and b are orthogonal

Question 10 10 / 10 pts

Find the scalar projection of $\mathbf{a = 5i - 7j - 6k}$ in the direction of $\mathbf{b = 2i + 6j - 3k.}$

Which of the following is closest to the result?

- -14

Correct!

- $\mathbf{-2}$
- 7
- $(5/2, -7/6, 2)$

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