QUESTION 1 — 0.75 points — Save Answer

If u and v are vectors in $\mathbb{R}^n$, such that $||u||=3$, $||u+v||=5$ and u and v are orthogonal, then $||v||$ is

- 4
- $\sqrt{5}$
- 0
- 2

QUESTION 2 — 0.75 points — Save Answer

The Vectors $(2, 1, 2)$ and $(-1, 0, u)$ are orthogonal if

- $u=2$
- $u=1$
- $u=0$
- $u=-1$

QUESTION 3 — 0.75 points — Save Answer

If $A=\begin{bmatrix}1&0&0\\0&1&0\\1&0&1\end{bmatrix}$, then adj (A) equals

- $\begin{bmatrix}1&0&-1\\0&1&0\\0&0&1\end{bmatrix}$
- $\begin{bmatrix}1&0&0\\0&1&0\\-1&0&1\end{bmatrix}$
- $\begin{bmatrix}1&0&0\\0&1&0\\0&0&1\end{bmatrix}$
- $\begin{bmatrix}-1&0&0\\0&1&0\\1&0&1\end{bmatrix}$

QUESTION 4 — 0.75 points — Save Answer

For $u, v \in \mathbb{R}^n$, with $||u||^2=5$, $||v||^2=1$ and $u \cdot v=-2$, the expression $(u+2v)\cdot(4u-v)$ equals

- $\sqrt{5}$
- 20
- 18
- 4

QUESTION 5 — 0.75 points — Save Answer

If $\begin{vmatrix}a&b\\c&d\end{vmatrix}=6$, then $\begin{vmatrix}2c&2d\\a&b\end{vmatrix}$ equals

- 12
- -24
- -12
- 8

QUESTION 6 — 1 points — Save Answer

What is x if det(A-2I)=10 and the matrix A is

$\begin{bmatrix}x&0&0\\2&0&0\\-1&4&-3\end{bmatrix}$

- $x=-3$
- $x=2$
- $x=3$
- $x=-2$

QUESTION 7 — 0.75 points — Save Answer

QUESTION 7 0.75 points Save Answer

If $A=\begin{bmatrix}0&0&2\\0&1&0\\1&0&0\end{bmatrix}$, then $\det(A^T)$ equals

- 2
- 4
- $\frac{1}{2}$
- -2

QUESTION 8 0.75 points Save Answer

If $A=\begin{bmatrix}2&0&3\\1&-1&0\\0&0&2\end{bmatrix}$, then the cofactor C_{12} equals

- 0
- -2
- 2
- 1

QUESTION 9 0.75 points Save Answer

If A is a 3x3 matrix such that $A=-A^T$, then

- $det(A)=0$
- A is symmetric
- $\det(A)\neq 0$
- $det(A)=-\frac{1}{2}$

QUESTION 10 0.75 points Save Answer

If $u=(-3,4,x)$ has norm $||u||=6$, then x equals

- $\pm\sqrt{2}$
- 1
- $\pm\sqrt{11}$
- 6

QUESTION 11 0.75 points Save Answer

Let $V=\mathbb{R}^2$ be the vector space on which addition is defined by $u+v=(u_1+v_1+1,u_2+v_2-1)$, for all $u=(u_1,u_2)$, $v=(v_1,v_2)\in\mathbb{R}^2$, $k\in\mathbb{R}$. The **zero vector** 0_V is

- (0,0)
- (1,−1)
- (−1,1)
- (−1,−1)

QUESTION 12 0.75 points Save Answer

For the linear system $\begin{matrix}2x-6y=a\\x+7y=b\end{matrix}$, the value of x is given by (using Cramer's rule)

- $\frac{\det\begin{bmatrix}2&-6\\1&7\end{bmatrix}}{\det\begin{bmatrix}a&-6\\b&7\end{bmatrix}}$
- $\frac{\det\begin{bmatrix}2&-6\\1&7\end{bmatrix}}{\det\begin{bmatrix}a&b\\1&7\end{bmatrix}}$
- $\frac{\det\begin{bmatrix}a&-6\\b&7\end{bmatrix}}{\det\begin{bmatrix}2&-6\\1&7\end{bmatrix}}$
- $\frac{\det\begin{bmatrix}a&b\\1&7\end{bmatrix}}{}$

Remaining Time: **1 hour, 59 minutes, 55 seconds.**

Question Completion Status:

QUESTION 12 — **0.75 points** Save Answer

For the linear system $\begin{matrix} 2x-6y=a \\ x+7y=b \end{matrix}$, the value of x is given by (using Cramer's rule)

- $\frac{det\begin{bmatrix} 2 & -6 \\ 1 & 7 \end{bmatrix}}{det\begin{bmatrix} a & -6 \\ b & 7 \end{bmatrix}}$
- $\frac{det\begin{bmatrix} 2 & -6 \\ 1 & 7 \end{bmatrix}}{det\begin{bmatrix} a & b \\ 1 & 7 \end{bmatrix}}$
- $\frac{det\begin{bmatrix} a & -6 \\ b & 7 \end{bmatrix}}{det\begin{bmatrix} 2 & -6 \\ 1 & 7 \end{bmatrix}}$
- $\frac{det\begin{bmatrix} a & b \\ 1 & 7 \end{bmatrix}}{det\begin{bmatrix} 2 & -6 \\ 1 & 7 \end{bmatrix}}$

QUESTION 13 — **0.75 points** Save Answer

If $A=\begin{bmatrix} 3 & 4 \\ 2 & 5 \end{bmatrix}$, then the product between A and adj(A) equals

- $2I_2$
- I_2
- $7I_2$
- 7

QUESTION 14 — **0.75 points** Save Answer

If $u=(1,-2,1)$ and $v=(2,1,1)$, then the values of a and b such that $au+bv=(-6,-8,-2)$ are

- $a=2, b=-4$
- $a=-4, b=2$
- $a=b=2$
- $a=b=4$

QUESTION 15 — **0.75 points** Save Answer

The angle between $u=(4,1,2)$ and $v=(1,0,-2)$ is

- $\frac{\pi}{3}$
- $\frac{\pi}{2}$
- $\frac{\pi}{4}$
- 0

QUESTION 16 — **0.75 points** Save Answer

There exist vectors $u, v \in \mathbb{R}^n$, such that $||u+v|| = ||u|| + ||v||$.

- True
- False

QUESTION 17 — **0.75 points** Save Answer

If A and B are 3x3 matrices, with $\det(A)=-1$ and $\det(3A^2BA^{-1})=-54$, then

- $det(B)=-18$
- $det(B)=18$

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers | Save and Submit

Remaining Time: **1 hour, 59 minutes, 50 seconds.**

Question Completion Status:

QUESTION 17 — **0.75 points** Save Answer

If A and B are 3x3 matrices, with $\det(A) = -1$ and $\det(3A^2BA^{-1}) = -54$, then

- $det(B) = -18$
- $det(B) = 18$
- $det(B) = -2$
- $det(B) = 2$

QUESTION 18 — **0.75 points** Save Answer

If A, B and C are square matrices of the same size, then $\det(A+B+C) = \det(A) + \det(B) + \det(C)$

- True
- False

QUESTION 19 — **0.75 points** Save Answer

The unit vector that has the same direction as $v = (3, 4, 12)$ is

- $u = (\frac{1}{3}, \frac{1}{4}, \frac{1}{12})$
- $u = (-3, -4, -12)$
- $u = (\frac{3}{12}, \frac{4}{12}, 1)$
- $u = (\frac{3}{13}, \frac{4}{13}, \frac{12}{13})$

QUESTION 20 — **0.75 points** Save Answer

If Ais a square matrix, then A is invertible if and only if A^2 is invertible.

- True
- False

QUESTION 21 — **0.75 points** Save Answer

If $w_1 = (5, 7)$ and $w_2 = (3, 4)$, then the distance $d(w_1, w_2)$ equals

- $\sqrt{13}$
- 13
- (2,3)
- 5

QUESTION 22 — **0.75 points** Save Answer

If $u = (1, 2, 1)$, then the values of the number k, such that $||ku|| = \sqrt{24}$ are

- $k = \pm\sqrt{6}$
- $k = \pm 6$
- $k = \pm 2$
- $k = \pm\sqrt{2}$

QUESTION 23 — **0.75 points** Save Answer

If A is a square matrix having all entries on its main diagonal equal to 0, then $\det(A) = 0$.

- True
- False

QUESTION 24 — **0.75 points** Save Answer

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers | Save and Submit

Remaining Time: 1 hour, 59 minutes, 47 seconds.

Question Completion Status:

- $\sqrt{13}$
- 13
- (2,3)
- 5

QUESTION 22 — 0.75 points — Save Answer

If $u = (1, 2, 1)$, then the values of the number k, such that $||ku|| = \sqrt{24}$ are

- $k = \pm\sqrt{6}$
- $k = \pm 6$
- $k = \pm 2$
- $k = \pm\sqrt{2}$

QUESTION 23 — 0.75 points — Save Answer

If A is a square matrix having all entries on its main diagonal equal to 0, then $\det(A) = 0$.

- True
- False

QUESTION 24 — 0.75 points — Save Answer

If $A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 2 & 5 \\ 1 & 4 & -2 \end{bmatrix}$, then the determinant of A equals

- 4
- −4
- −12
- 0

QUESTION 25 — 1 points — Save Answer

If $A = \begin{bmatrix} -1 & 2 & 6 \\ d & 0 & 3 \\ 1 & 0 & 2 \end{bmatrix}$

- $det(A) = 4d - 6$
- $det(A) = -4d + 6$
- $det(A) = 4d - 3$
- $det(A) = -4d + 3$

QUESTION 26 — 0.75 points — Save Answer

If A and B are square matrices of the same size, then $\det(A^2B^5)$ equals

- $(2det(A)((5\ det(B))$
- $2det(A) + 5det(B)$
- $(det(A))^2(det(B))^5$
- $(det(A)det(B))^{10}$

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answers | Save and Submit