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# Unit 4 - Week 2



## Linear algebra - Assignment 2 - Part 2

**The due date for submitting this assignment has passed. Due on 2020-02-12, 23:59 IST.**
**As per our records you have not submitted this assignment.**

1) The distance between two vectors say $V_1 = [15 \;\; 16 \;\; 2]^T$ and $V_2 = [18 \;\; 16 \;\; 1]^T$ is ***1 point***

- √3 units
- √10 units
- 2√3 units
- √21 units

No, the answer is incorrect.
Score: 0
Accepted Answers:
*√10 units*

2) The unit vector of a vector $[5 \;\; 8]^T$ is ***1 point***

- $\begin{bmatrix} 5/\sqrt{89} \\ 2/\sqrt{9} \end{bmatrix}$
- $\begin{bmatrix} 5/\sqrt{13} \\ 8/\sqrt{13} \end{bmatrix}$
- $\begin{bmatrix} 29/\sqrt{5} \\ 29/\sqrt{2} \end{bmatrix}$
-

$\begin{bmatrix} 5/\sqrt{89} \\ 8/\sqrt{89} \end{bmatrix}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\begin{bmatrix} 5/\sqrt{89} \\ 8/\sqrt{89} \end{bmatrix}$

3) Two vectors are said to be orthogonal when their dot product is **1 point**

- 0
- 1
- ∞
- Not defined

No, the answer is incorrect.
Score: 0

Accepted Answers:
*0*

4) Which of the following sets of vector is/are orthogonal **1 point**

$$I. \quad v_1 = (5 \quad -2 \quad 3)^T \; v_2 = (-2 \quad 4 \quad 6)$$
$$II. \quad v_1 = (1 \quad -2 \quad 4), v_2 = (2 \quad 5 \quad 2)^T$$
$$III. \quad v_1 = (1 \quad -2 \quad 4)^T, v_2 = (-1 \quad 4)^T$$
$$IV. \quad v_1 = (14 \quad 5), v_2 = (10 \quad -2)^T$$

- I
- I, II
- I, II , III
- III, IV

No, the answer is incorrect.
Score: 0

Accepted Answers:
*I, II*

5) State whether the following statements are True / False **1 point**

i) All orthonormal vectors are orthogonal
ii) Basis vectors are set of vectors that are dependent and span the space

- i)- False ii) – True
- i) - True ii) – True
- i) – True ii) – False
- i) - False ii) – False

No, the answer is incorrect.
Score: 0

Accepted Answers:
*i) – True ii) – False*

6) **1 point**

The point $\begin{pmatrix} x \\ y \\ z \\ q \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$ is in _____ half space of the hyper plane

$$3x + 2y - 6z + 8q = 24$$

- Positive

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- Negative
- On the hyperplane
- Cannot be decided

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Negative*

7) *P* is an *m*×*n* matrix whose columns are linearly independent. The nullity of *A* is **1 point**

- Zero
- 1
- Not defined
- R

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Zero*

8) A set of linear equations is represented by the matrix equation *Ax=b*. The necessary condition for the existence of a solution for the system is **1 point**

- b must be linearly independent of the columns A
- A must be non invertible
- A must be invertible
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
*A must be invertible*

9) State whether the following statements are True / False **1 point**

i) If the eigen values becomes complex, eigen vectors become real
ii) Symmetric matrix will have real eigen values

- i) - True ii) – True
- i) – True ii) – False
- i) - False ii) – False
- i)- False ii) – True

No, the answer is incorrect.
Score: 0
Accepted Answers:
*i)- False ii) – True*

10) If the projection of $\vec{a}$ on $\vec{b}$ and projection of $\vec{b}$ on $\vec{a}$ are equal then the angle between $\vec{a}+\vec{b}$ and $\vec{a}-\vec{b}$ is **1 point**

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

$\frac{\pi}{4}$

$\frac{2\pi}{3}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{\pi}{2}$