

Practice Exam 2

Name:_____

Make sure to neatly and clearly show all work and mark your answers.

I have neither given nor received aid on this exam.

Signature:_____

Make sure to neatly and clearly **show all work** for each problem.

1. Let W be the set of all symmetric matrices of size 2×2 . Recall that symmetric means that $A = A^T$. Prove or disprove that W is a subspace of $M_{2,2}$. (You may assume $M_{2,2}$ is a vector space).

2. Let $W = \{(x, x^2) : x \in \mathbb{R}\}$. Prove or disprove that W is a subspace of \mathbb{R}^2 .

1. Written Solution

2. Video Solution

3. Let $S = \{(5, 2)\}$. Determine if S is

1. linearly independent,

2. a spanning set,

3. a basis

of \mathbb{R}^2 . Provide a proof or disproof for each of these.

1. Written Solution

2. No Video Solution

4. Let $S = \{(3, 5, 2), (1, 7, 8), (9, 3, 3), (4, 2, 7)\}$. Determine if S is

1. linearly independent,

2. a spanning set,

3. a basis

of \mathbb{R}^3 . Provide a proof or disproof for each of these.

1. Written Solution

2. Video Solution

5. Let $S = \{(2, 0, 0), (4, 0, -2), (6, 1, -1)\}$. Determine if S is

1. linearly independent,

2. a spanning set,

3. a basis

of \mathbb{R}^3 . Provide a proof or disproof for each of these.

1. Written Solution

2. Video Solution

6. Let A be given as below.

$$A = \begin{bmatrix} 1 & 2 & 4 & 66 \\ 3 & 6 & 1 & 11 \\ 7 & 14 & 6 & 88 \end{bmatrix}$$

1. What is the rank of A ?

2. Find a basis for the row space of A .

3. Find a basis for the column space of A .

4. Find a basis for the nullspace of A .

1. Written Solution

2. Video Solution