Week 08 Participation Part 2

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Contents

1 Part 2

1. W is the set of all vectors in $\mathbb{R}^3$ such that $x_3 = 0$.

2. W is the set of all vectors in $\mathbb{R}^3$ such that $x_1 = 5x_2$.

3. W is the set of all vectors in $\mathbb{R}^3$ such that $x_2 = 1$.

4. W is the set of all vectors in $\mathbb{R}^3$ such that $x_1 + x_2 + x_3 = 1$.

5. W is the set of all vectors in $\mathbb{R}^4$ such that $x_1 + 2x_2 + 3x_3 + 4x_4 = 0$.

6. W is the set of all vectors in $\mathbb{R}^4$ such that $x_1 = 3x_3$ and $x_2 = 4x_4$.

7. W is the set of all vectors in $\mathbb{R}^2$ such that $\|x_1\| = \|x_2\|$.

8. W is the set of all vectors in $\mathbb{R}^2$ such that $(x_1)^2 + (x_2)^2 = 0$.

9. W is the set of all vectors in $\mathbb{R}^2$ such that $(x_1)^2 + (x_2)^2 = 1$.

10. W is the set of all vectors in $\mathbb{R}^2$ such that $\|x_1\| + \|x_2\| = 1$.

11. W is the set of all vectors in $\mathbb{R}^4$ such that $x_1 + x_2 = x_3 + x_4$.

12. W is the set of all vectors in $\mathbb{R}^4$ such that $x_1x_2 = x_3x_4$.

13. W is the set of all vectors in $\mathbb{R}^4$ such that $x_1x_2x_3x_4 = 0$.

14. W is the set of all vectors in $\mathbb{R}^4$ whose components are all nonzero.

For the above definitions, give an example of an element that belongs to the set W and an example of elements that does not belong to the set W.

1.1 1.

a. $\vec{v}_1 =< 1, 1, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1, 1 >$

2. $\vec{v}_3 =< 2, 2, 2 >$

1.2 2.

a. $\vec{v}_1 =< 5, 1, 1 >$

b. **1.** $\vec{v}_2 =< 6, 1, 1 >$

2. $\vec{v}_3 =< 7, 1, 1 >$

1.3 3.

a. $\vec{v}_1 =< 1, 1, 1 >$

b. **1.** $\vec{v}_2 =< 2, 2, 2 >$

2. $\vec{v}_3 =< 3, 3, 3 >$

1.4 4.

a. $\vec{v}_1 =< 1, 0, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1, 1 >$

2. $\vec{v}_3 =< 2, 2, 2 >$

1.5 5.

a. $\vec{v}_1 =< 0, 0, 0, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1, 1, 1 >$

2. $\vec{v}_3 =< 2, 2, 2, 2 >$

1.6 6.

a. $\vec{v}_1 =< 3, 4, 1, 1 >$

b. **1.** $\vec{v}_2 =< 1, 1, 1, 1 >$

2. $\vec{v}_3 =< 2, 2, 2, 2 >$

1.7 7.

a. $\vec{v}_1 =< 1, 1 >$

b. **1.** $\vec{v}_2 =< 1, 2 >$

2. $\vec{v}_3 =< 2, 1 >$

1.8 8.

a. $\vec{v}_1 =< 0, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1 >$

2. $\vec{v}_3 =< 2, 2 >$

1.9 9.

a. $\vec{v}_1 =< 1, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1 >$

2. $\vec{v}_3 =< 2, 2 >$

1.10 10.

a. $\vec{v}_1 =< 1, 0 >$

b. **1.** $\vec{v}_2 =< 1, 1 >$

2. $\vec{v}_3 =< 2, 2 >$

1.11 11.

a. $\vec{v}_1 =< 1, 1, 1, 1 >$

b. **1.** $\vec{v}_2 =< 1, 1, 2, 2 >$

2. $\vec{v}_3 =< 2, 2, 1, 1 >$

1.12 12.

a. $\vec{v}_1 =< 1, 1, 1, 1 >$

b. **1.** $\vec{v}_1 =< 1, 1, 2, 2 >$

2. $\vec{v}_2 =< 2, 2, 1, 1 >$

1.13 13.

a. $\vec{v}_1 =< 0, 0, 0, 1 >$

b. **1.** $\vec{v}_2 =< 1, 1, 1, 1 >$

2. $\vec{v}_3 =< 2, 2, 2, 2 >$

1.14 14.

a. $\vec{v}_1 =< 1, 1, 1, 1 >$

b. **1.** $\vec{v}_2 =< 1, 0, 0, 0 >$

2. $\vec{v}_3 =< 0, 0, 0, 1 >$