Class 4 Homework

1. Express $\langle a, b\rangle + \langle c, d\rangle$ in terms of a, b, c, d.

2. If the vector $\vec{v} = 1\langle 1, 0, 1\rangle + 0\langle 0, 0, 1\rangle$, what is $\vec{v}$?

3. Can you define a vector space within $\mathbb{Z}_2^4$ that includes $\langle 0, 1, 0, 1\rangle$ and $\langle 0, 1, 1, 1\rangle$? (There are multiple.)

4. Is the vector $\langle 0, 1, 0, 0, 1\rangle$ within the vector space

$$S = \{a\langle 0, 0, 1, 0, 0\rangle + b\langle 0, 0, 0, 0, 1\rangle,\ a, b \in \mathbb{Z}_2\}\ ?$$

Why or why not?

5. Can you define a vector space within $\mathbb{Z}_4^3$? What are some examples of vectors that would be in your vector space?