

Name:

1. For each of the following statements, write the word “true” or “false.”

(a) Let W be a subspace of a vector space V . Then any basis for W can be expanded to a basis for V .

(b) Let W be a subspace of a finite-dimensional vector space V which is not equal to V . Then $\dim W < \dim V$.

2. Find a basis for the following subspace of M_{33} , where $\mathbf{u} = (1, 0, -1)^T$.

$$S = \{B \in M_{33} \mid B\mathbf{u} = \mathbf{0}\}$$