T/F One

Mark each statement True or False. Justify each answer.

1. A subspace is also a vector space.

2. A vector is any element of a vector space.

3. A vector space is also a subspace.

4. $\mathbb{R}^2$ is a subspace of $\mathbb{R}^3$.

5. The null space of A is the solution set of the equation $A\mathbf{x} = \mathbf{0}$.

6. The null space of an $m \times n$ matrix is in $\mathbb{R}^m$.

7. The column space of A is the range of the mapping $\mathbf{x} \mapsto A\mathbf{x}$.

8. If the equation $A\mathbf{x} = \mathbf{b}$ is consistent, then $\operatorname{Col} A$ is $\mathbb{R}^m$.