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## Math 2B: Applied Linear Algebra

True/False For the problems below, circle T if the answer is true and circle F is the answer is false.

| 1. | T | F | $\mathbb{Z} \subseteq \mathbb{Q}$ |
| :--- | :--- | :--- | :--- |
| 2. | T | F | $0 \in \mathbb{N}$ |
| 3. | T | F | $\mathbb{R} \nsubseteq \mathbb{Z}$ |
| 4. | T | F | $\sqrt{2} \notin \mathbb{Q}$ |
| 5. | T | F | $0 \in \mathbb{Z}$ |
|  |  |  |  |
| 6. | T | F | The set of nonnegative integers is equal to the set of positive integers. |
| 7. | T | F | $\mathbb{Q} \subseteq \mathbb{N}$ |

Multiple Choice For the problems below, circle the correct response for each question.

1. Let $A$ and $B$ be sets. What does it mean if we say that $A$ is a subset of $B$ ?
A. Some element $x$ in $A$ is also an element of $B$.
B. $A$ is an element of $B$.
C. Every element $x$ in $A$ is contained in some element $y$ of $B$.
D. Every element $x$ in $A$ is also an element of $B$.
E. Every element $y$ in $B$ is also an element of $A$.
2. For sets $A$ and $B$, the statement "If $x \in A$, then $x \in B$ " is written using which of the following?
A. $A \leq B$
B. $B \subseteq A$
C. $A=B$
D. $A \subseteq B$
E. $A \neq B$

## Free Response

1. Let $A=\{n \in \mathbb{N}: n-4<10\}$ and $B=\left\{m \in \mathbb{N}: m^{2} \leq 169\right\}$. Prove that $\mathrm{A}=\mathrm{B}$.
