## 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.	Т	F	$\mathbb{Z}\subseteq \mathbb{Q}$
2.	Т	F	$0 \in \mathbb{N}$
3.	Т	F	$\mathbb{R} \not\subseteq \mathbb{Z}$
4.	Т	F	$\sqrt{2}  otin \mathbb{Q}$
5.	Т	F	$0 \in \mathbb{Z}$
6.	Т	F	The set of nonnegative integers is equal to the set of positive integers.
7.	Т	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  $B = \{m \in \mathbb{N} : m^2 \le 169\}$ . Prove that A = B.