QUIZ 5 **WED., OCT. 28** **NAME:**

DIRECTIONS:

- No papers, phones, calculators, or gadgets are permitted to be out during the quiz.
- Show all work, clearly and in order **You will lose points if any of these instructions are not followed.**

Questions	Points	Score
1	1	
2	2	
3	2	
Total	5	

Problem 1: (1 point) State the ϵ-property.

For all $\epsilon > 0$, there exists $m \in \mathbb{N}$ such that $\frac{1}{m} < \epsilon$.

Problem 2: (2 points) For any poset $(A, \leq)$ and subset $B \subseteq A$, prove that B has at most one least upper bound, $lub(B)$

Proof: Suppose L and L' are both least upper bounds of B. Then by the definition of least upper bound $L \leq L'$ and $L' \leq L$. Hence $L = L'$.

Q.E.D.

Problem 3: (2 points) Label the following true or false

(a) (0.5 points) ___F___ A relation, $\sim$, on a set A that yields a poset $(A, \sim)$ is a special kind of equivalence relation. That is it is reflexive, symmetric, and transitive.

(b) (0.5 points) ___F___ $\mathbb{Q}$ has the greatest lower bound property.

(c) (0.5 points) ___T___ $\mathbb{R}$ is a complete ordered field.

(d) (0.5 points) ___F___ If an ordered field, F, has the greatest lower bound property, then any non-empty subset $B \subseteq F$ has a greatest lower bound.