MAS241 - Analysis I

Quiz 1 - March 21, 2019

Student ID: Name:

Correct answer - 5 points
No answer - 2 points
Wring answer - 0 points

		T	F
1.	Suppose that S is an ordered set with the least-upper-bound property, $B \subset S$, and B is not empty. Then, $\inf B$ exists in S. (False. Consider $B = \{-1, -2, \dots\} \subset \mathbb{R}$.)	☐	☐
2.	The set of integers ($\mathbb{Z}$) is an ordered field. (False.)	☐	☐
3.	No order can be defined in the complex field that turns it into an ordered field. (True.)	☐	☐
4.	For $x, y \in \mathbb{R}^1$, if we let $d(x, y) = 1$ if $x \neq y$ and $d(x, y) = 0$ if $x = y$, then it is a metric. (True.)	☐	☐
5.	The set of all integers as a subset of $\mathbb{R}^1$ is closed. (True.)	☐	☐
6.	Let $G_n = (0, \frac{1}{n})$ $(n = 1, 2, 3, \dots)$. Then, $\cap_{n=1}^{\infty} G_n$ is an open subset of $\mathbb{R}^1$. (True. $\cap_{n=1}^{\infty} G_n = \emptyset$, which is open.)	☐	☐
7.	Every finite set is compact. (True.)	☐	☐
8.	Let $B = \{x \in \mathbb{R}^2 : \lvert x\rvert \leq 1\}$. Then, any closed subset of B is compact in $\mathbb{R}^2$. (True. It is a closed subset of a compact set.)	☐	☐
9.	Every infinite subset of $\mathbb{R}^k$ has a limit point in $\mathbb{R}^k$. (False.)	☐	☐
10.	There exists a perfect set in $\mathbb{R}^1$ that contains no segment. (True. The Cantor set is an example.)	☐	☐