Quiz #4

Monday, October 9 2017

Duration: 25 min

NAME: _____

Please write clearly and properly.

Problem	Grade
1	
2	
3	
Total	

Problem 1 (~ 6 points.)**.**

Write a proof of the following theorem:

Theorem. *For any integer $n \in \mathbb{Z}$, n is even if and only if n^2 is even.*

Problem 2 (~ 4 points.)**.**

Let a and b be two real numbers. Prove that if a and b are both rational, then $a + b$ is rational. Is the converse true?

Problem 3 (~ 6 points.)**.**

Write a proof of the following theorem:

Theorem. *There exists no smallest positive rational number.*

Hint: Write a proof by contradiction.