

(Take Home) Quiz #7 11/30/09

Name: _____

Directions: Make sure to read each problem carefully. To receive full credit, you must show all of your work. You are not allowed to work with anyone on this assignment. However, you may use your book and notes.

Problem 1. (5 points) For $a, b \in \mathbb{Z}^+$, prove that $\gcd(na, nb) = n \gcd(a, b)$.

Problem 2. (5 points) Prove that for any $n \in \mathbb{Z}^+$, $\gcd(5n + 3, 7n + 4) = 1$.

Problem 3. (5 points) Prove or disprove:

If $4 a^2$, then $4 a$.

Problem 4. (3 points) If $a, b \in \mathbb{Z}^+$ with $a = 630$, $\gcd(a, b) = 105$, and $\text{lcm}(a, b) = 242550$, what is b ?