Math 3520 - Quiz 7

Name:_____

Type proof in complete and **proper English**. Make certain to use **complete sentences** and **state what you are trying to prove**. Your work should stand on its own and be clear to you or a future student without any additional explanation. If it is not immediately clear to you it won't be clear to you in the future nor will it be clear to other students.

1. Let $a, b, c \in \mathbb{Z}$ where $\gcd(a, b) = 1$. If $a|c$ and $b|c$ then $ab|c$.
2. For $a \in \mathbb{Z}$ and $n \in \mathbb{N}$ show that $\gcd(a, a + n)|n$.
3. Let a and b be two integers both not zero and let $d = gcd(a, b)$. Then $gcd(ka, kb) = kd$ for any positive integer k.
4. For the following pairs of numbers, find their gcd and and find a linear combination of the numbers equal to their gcd.
   (a) $a = 777$ and $b = 185$
   (b) $a = 300$ and $b = 186$
5. Let $f : A \to B$ and let $g : B \to C$. Show if $g \circ f$ is onto then g is onto. This problem is from the functions section.