1. (5 pts) (Pb. 59, section 1.3): Let $A$ and $B$ integers and let $D$ be a positive integer.
(a) Prove the following: If $D$ divides $A$ and $D$ divides $B$, then $D$ divides both $A + B$ and $A - B$.
(b) Is the converse of proposition given in (a) true? If so, prove it; if not, give a counter-example.

2. (5 pts) Suppose $T$ is a set of real numbers. We say that a real number $l$ is a lower bound for $T$ if $l \leq t$, for all $t \in T$. We say that a number $m$ is the greatest lower bound of the set $T$ if $m$ is a lower bound for $T$ and for any $\epsilon > 0$, $m + \epsilon$ is not a lower bound for $T$.
(a) Without using any negative words, rewrite the meaning of “$m$ is the greatest lower bound of the set $T$”.
(b) Without using any negative words, rewrite the meaning of “$y$ is not the greatest lower bound of the set $T$”.

Note: This is a complement of the exercise 45 in section 1.3 of your textbook.