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Homework 2 MAA 3200

Fall 2009

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.