Math 2326 - Introduction to Abstract Mathematics
Assignment 3 - Due Wednesday, January 25

You will need to use the following definitions to complete some of the problems.

Definition: Let x and y be integers. We say that x *divides* y if there is an integer k such that $kx = y$.

Definition: For any integer $n \geq 2$, $\binom{n}{2} = \dfrac{n(n-1)}{2}$.

Problem 12: Suppose x, y, and z are integers.

a. If x divides y and x divides z, show that x^2 divides yz.

b. In class we proved that if x divides y or x divides z, then x divides yz. Write both the converse and the contrapositive of this statement. If the converse is true, prove it, and if not, then find a counterexample.

Problem 13: Show that for any integer $n \geq 2$, $\binom{n}{2}$ is an integer.

Problem 14: Find a definition for the the set of real numbers, $\mathbb{R}$.[1]

[1] Please include your source, which cannot be Wikipedia