Math 301
Quiz 5

Show all work in a neat and organized fashion. Clearly indicate your answers.
10 points possible.

1. (4 pts.) Let n be a positive integer. Prove that congruence modulo n is a symmetric relation on the set of integers.

2. (3 pts.) Prove that if w and b are both odd integers, then $w \equiv b \pmod 2$.

3. (3 pts.) To draw a picture of a relation R on a set A, we make a diagram in which each element of A is represented by a dot. If $a \; R \; b$, then we draw an arrow from dot a to dot b. If it should happen that b is also related to a, we draw another arrow from b to a. And if $a \; R \; a$, then we draw a looping arrow from a to itself.

Let $A = \{1, 2, 3, 4, 5\}$, and let R be the relation $\geq$. Draw a picture of this relation.

Optional Bonus Problem. (3 optional bonus points possible.) In terms of the *picture* (as in Problem 3) of a relation on a set, what does it mean for a relation to be reflexive? symmetric? transitive?