1) Use Venn diagrams to determine whether each of the following is true or false:

a. (*A* union *B*) intersect *C* = *A* union (*B* intersect *C*)

b. *A* intersect (*B* union *C*) *= (A* intersect *B)* union (*A* intersect *C*)

2) Calculate the number of integers divisible by 4 between 50 and 500, inclusive.

3) Use the permutation formula to calculate the number permutations of the set {*a*, *b*, *c*, *d*} taken two at a time. Also list these permutations.

4) Determine whether each of the following functions is 1-to-1 and whether it is onto. Assume the domain and co-domain is **Z**, the integers. Explain your answers.

a. *f*(*n*) = *n* / 2, assuming integer division

b. g(*n*) = *4n* + 5