**373 Math Problems**

**Sheet #2**

**From Text book:**

2.3:1, 2, 3, 4, 5, 6, 7, 8, 9, 13.

2.4: 1, 2, 3, 4, 5, 6, 7, 10, 13, 14, 15, 16, 17,

**Additional Problems:**

1. In , do rationals form an open set? Closed set? Neither? Both? Justify your answer.
2. Consider . Find Cl(A) in .
3. Give an example of a collection of open sets whose intersection is not open.
4. Give an example of two sets A and B of In such that A and A\B are both open but B is not closed.
5. Give an example of a countable set in In that is not closed.
6. Give an example of a countable set in In that is closed.
7. Prove that
8. Prove that
9. Prove that

**From Text book:**

2.5:1,2,3,4,5,9.10.

**Additional Problems:**

1. Find a base for the open half-line topology which is different from the topology itself.
2. Let be a topological space and a base for . Prove that is dense in X iff each nonempty element of contains a point of *A*.