Math 445 **Geometry for Teachers** **Winter 2007**

Assignment #7
Due Wednesday, 2/21/07

Reading: Chapters 1–7 of Jacobs.

Reading report: Due Monday, 2/19/07, by midnight.

Written assignment:

Consider the following three theorems in Jacobs:

1. Theorem 15: The Triangle Inequality Theorem.
2. Theorem 22: The AAS Theorem.
3. Theorem 25: The opposite sides of a parallelogram are equal.

For each of these theorems, do the following:

- Working backwards from the theorem itself, trace the flow of logic from the axioms to the final statement of the theorem. Be sure to include all the stated theorems or axioms that each result depends on. You don't have to mention non-geometric facts that are used, such as those having to do only with algebra or logic. Your final result should be a "dependence chart" like the one I will construct in class on Friday.
- Find the analogous theorem in Venema, and do the same thing for that.
- See if you can find any place where Jacobs (or, less likely, Venema) has used a geometric fact that has not been proved or assumed (such as the Crossbar Theorem). Be as explicit as possible about where it is used.
- Write a brief discussion of the similarities and differences between the logic flows in the two books. Why you think the two authors chose the logical paths they chose? Do the choices make pedagogical sense? Do they make logical sense? Were other choices possible? Support your contentions.