Homework 2 - Due Wed. Feb 6th

Scores: 2.2 2.3 2.4 2.5 5 6 7 8

This homework is due on or before the beginning of class Wed. Feb 6th. Printed submissions are preferred but electronic submissions are preferable to late homework.

Directions: Seeking help is allowed. You may discuss these problems with others or consult an outside reference. However, make sure you write your submitted answers up by yourself without books or notes. This is important as our midterm and final will be closed book and note, in class tests. Make sure you are learning precise definitions as you encounter them in the homework. You will be asked definitions on tests.

Homework 2: Questions (1)-(4) are textbook problems in Chapter 2: 2,3,4,5

(5) Recall we defined two triangles to be congruent if and only if they satisfy both SSS and AAA. Other developments of Euclidean geometry start by defining two triangles to be congruent if and only if there is an isometry of the plane mapping one triangle onto the other. Explain why triangles ΔABC and ΔDEF are congruent in this development if and only if they are congruent in our development.

(6) Prove the bisector of an angle A is the set of all points which are equidistant from the lines through the rays which meet to form the angle A.

(7) Show that for any triangle ΔABC, the angle bisectors are concurrent.

(8) One of the angles of the triangle measures 120°. Show that in this triangle the feet of the angle bisectors form a right triangle.

Note that the foot of an angle bisector is the point where the bisector intersects the side opposite the angle. Here the feet are labeled D,E, and F.