Mathematics 2260H – Geometry I: Euclidean geometry
Trent University, Winter 2011

Problem Set #3
Congruence
Due on Monday, 31 January, 2011.

We have proved the side-angle-side (SAS) congruence criterion in class (Euclid's Proposition I-4), and we will prove the side-side-side (SSS) congruence criterion (Euclid's Proposition I-8) soon.

1. (Exercises 2.3B #3) Use the notion of an application to prove the angle-side-angle (ASA) congruence criterion. (*i.e.* That is, if two triangles have two angles of one equal, respectively, to two angles of the other, and if the sides joining these angles are also equal, then the triangles are congruent) *[10]* .

It turns out that the angle-angle-side (AAS) congruence criterion also works, though we'll save that for another day. In the meantime:

2. Does the the angle-side-side (ASS) congruence criterion work? (*i.e.* Is it true that if two triangles have an equal angle, and an equal side on one side of the angle, and an equal side opposite the angle, then the triangles are congruent?) Prove it or give a counterexample. *[10]*