Mathematics 2260H – Geometry I: Euclidean geometry
TRENT UNIVERSITY, Winter 2013

Assignment #3
Congruence Criteria
Due on Friday, 30 January, 2013.

1. Find triangles $\triangle ABC$ and $\triangle DEF$ such that $\angle ABC = \angle DEF$, $|BC| = |EF|$, and $|CA| = |FD|$, but $\triangle ABC \not\cong \triangle DEF$ (*i.e.* $\triangle ABC$ is not congruent to $\triangle DEF$). *[5]*

NOTE: Such an example shows that the Angle-Side-Side (ASS) congruence criterion for triangles does not work.

2. Show that if quadrilaterals $\square ABCD$ and $\square EFGH$ (neither of which has sides crossing except at the vertices) satisfy $|AB| = |EF|$, $\angle ABC = \angle EFG$, $|BC| = |FG|$, $\angle BCD = \angle FGH$, and $|CD| = |GH|$, then $\square ABCD \cong \square EFGH$. *[5]*

NOTE: That is, you need to show that the Side-Angle-Side-Angle-Side (SASAS) congruence criterion for quadrilaterals does work.