Quiz #2. Math 360, Axiomatic Geometry. Name: ______________________
Instructor: Ramin Naimi Fri 27 Sept 2002

Closed book. Closed Notes. 20 points per problem. Please write very legibly.

1. (20 points) Suppose A, B, and C are noncollinear points and L is a line not containing any of them. Prove that if L intersects one of the segments of the triangle ABC, then it intersects a second one.

2. (20 points) Let ABC be a triangle. Prove that if $AB > AC$, then $m\angle C > m\angle B$. (Hint: Let D be a point between A and B such that $AD = AC$.)

3. (20 points) Let ABC be a triangle. Let P, Q, R, and S be four distinct points such that

   (a) $PQ = BC$,

   (b) R and S are on the same side of $\overleftrightarrow{PQ}$,

   (c) $m\angle RPQ = m\angle B$, and

   (d) $m\angle SQP = m\angle C$.

   Prove that $\overrightarrow{PR} \cap \overrightarrow{QS} \neq \emptyset$.