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 $PQ$,
   
   (c) $m \angle RPQ = m \angle B$, and
   
   (d) $m \angle SQP = m \angle C$.

   Prove that $PR \cap QS \neq \emptyset$. 

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**Quiz #2. Math 360, Axiomatic Geometry.**

Instructor: Ramin Naimi

Fri 27 Sept 2002

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