MthT 411 Sample Questions
The exam will contain three questions of roughly this level of
difficulty; it will be restricted to chapters 6-9.

1. Prove that no triangle is convex.

2. Given two parallel lines a, b satisfying $b \subseteq \Psi_a^2$. Prove that $\Gamma_a[b] \subseteq \Psi_a^1$.

3. Let a, b, c be three lines that meet at one point V. Prove that c meets one or two but not more of the four quadrants $\Psi_a^1 \cap \Psi_b^1$, $\Psi_a^1 \cap \Psi_b^2$, $\Psi_a^2 \cap \Psi_b^1$, $\Psi_a^2 \cap \Psi_b^2$. (This one is probably a bit more interesting than the actual problems on the exam. Why do I say one OR two?)

4. (8.25.4) Show that $\overrightarrow{AD}$ is an *interior* ray of $\angle BAC$ if and only if $\overset{\circ}{\overrightarrow{AD}} = AC \cap \text{int} \angle BAC$.

5. (8.54) If $D \in \text{Int} \triangle ABC$ then $AD \cdot \overset{\circ}{\overline{B}} \overset{\circ}{C} \neq \emptyset$.