Math 431 Homework 4
Due 10/13

1. (Page 104, Exercise 1) Suppose that $A * B * C$ and $A * C * D$.
  (a) Prove that A, B, C, D are four distinct points.
  (b) Prove that A, B, C, D are collinear.
  (c) Prove the corollary to B-4.

2. Prove Proposition 3.1(ii) on page 75: For any two points A and B, $\overrightarrow{AB} \cup \overrightarrow{BA} = \{\overleftrightarrow{AB}\}$.

3. Let $\mathcal{A}$ be an affine plane. Show that the projective completion of $\mathcal{A}$, $\mathcal{A}^*$ satisfies axioms I1, I2+, I3 and elliptic parallel postulate.
Axiom I2+: For every line l there are at least three distinct points incident with it.