

**Examlet 1    Advanced Geometry    2/9/15**

1. a) State the definition of parallel lines.

b) State the definition of opposite rays.

c) State the definition of angle congruence.

2. a) State the Existence Postulate.

b) State the Incidence Postulate.

c) State the Plane Separation Postulate.

3. a) Suppose we have a set of points given by  $\{A, B, C\}$  and our lines are the sets  $\{A, B\}$  and  $\{B, C\}$ . Which axioms of incidence geometry does this system satisfy, and why?

b) Suppose we have a set of points given by  $\{A, B, C, D\}$  and our lines are the sets  $\{A, B\}$ ,  $\{A, C\}$ ,  $\{A, D\}$ , and  $\{B, C, D\}$ . Which axioms of incidence geometry does this system satisfy, and why?

4. If  $A$ ,  $B$ , and  $C$  are three noncollinear points, then there exists a unique angle bisector for  $\angle BAC$ .

5. Prove that if  $C \in \overrightarrow{AB}$  and  $C \neq A$ , then  $\overrightarrow{AB} = \overrightarrow{AC}$ .

