Examlet 1 Advanced Geometry 2/11/13

1. a) State the definition of a metric.

b) State the definition of parallel lines.

c) State the definition of an angle.

2. Show that if A and B are distinct points, then there exists a unique point M such that M is the midpoint of $\overline{AB}$.

3. a) State the axioms for an incidence geometry.

b) Suppose we have a set of points given by $\{A, B, C, D\}$ and our lines are the sets $\{A, B\}$, $\{A, C\}$, $\{A, D\}$, $\{B, C\}$, $\{B, D\}$, and $\{C, D\}$. Does this form an incidence geometry? Explain.

c) Suppose we have a set of points given by $\{A, B, C, D\}$ and our lines are the sets $\{A, B, C\}$, $\{A, B, D\}$, $\{A, C, D\}$, and $\{B, C, D\}$. Does this form an incidence geometry? Explain.

4. Prove that the base angles of an isosceles triangle are congruent.

5. Explain why taxicab geometry is important in regard to the SAS Postulate.