MATH 476 – College Geometry

Solutions to Homework Assignment 2

Section 2.6: 1, 4, 5, 10

1. (a) $H(P, \overleftrightarrow{TS})$

   (b) $H(T, \overleftrightarrow{PR})$

   (c) $H(P, \overleftrightarrow{TS}) \cap H(T, \overleftrightarrow{PR})$

4. Since $\overleftrightarrow{BC}$ partitions the plane, the "pieces" are disjoint or equal. If $D \in H(A, \overleftrightarrow{BC})$, then $H(D, \overleftrightarrow{BC})$ and $H(A, \overleftrightarrow{BC})$ are clearly not disjoint; thus, they must be equal.

5. See back of book.

10. This is false: suppose that the two lines are parallel. Then the intersection of the two half-planes that meet is a strip, not an angle interior.

Section 3.1: 2, 4, 8, 11, 12, 13

2. (a) $\angle ACB \cong \angle ACD$. $\angle SVU \cong \angle RVW$.

   (b) $m\angle UVR = m\angle SVU + m\angle SVR = m\angle RVW + m\angle SVR = m\angle SVW$.

4. $\overline{LN} \cong \overline{RT}, \overline{rs} \cong \overline{LM}, \overline{ST} \cong \overline{MN}$.

8. $\triangle ABC$ and $\triangle FED$ satisfy the SAS hypothesis.

11. See back of book.

12. $\angle BAD = \overrightarrow{AD} \cup \overrightarrow{AB}$. $\angle CAD = \overrightarrow{AD} \cup \overrightarrow{AC}$. By Theorem 4 in Section 2.4, $\overrightarrow{AC} = \overrightarrow{AB}$, so these two sets are equal. That is, $\angle BAD = \angle CAD$, so they are congruent.

13. See back of book.

Section 3.2: 12

12. Consider the points at $(0, 0), (2, 2)$, and $(2, -2)$. These points lie on infinitely many circles: any circle of radius a centered at $(a, 0)$ with $a \geq 1$ will pass through all three points.