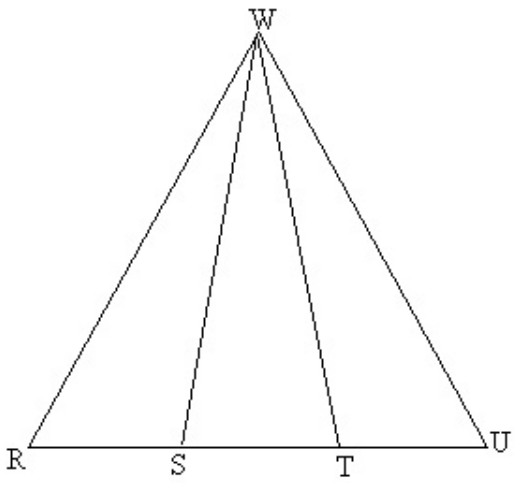
Math 372 Exam 2 Total pages: 2 Total points: 50
Instructor: Yi Wang

Name(Print)_____ Section _____ Grade_____
Attention: **Answers without supporting work shown on the paper will receive NO credits.**

1. (5 points) Prove the statement: If $PA = PB$ and M is the midpoint of segment $\overline{AB}$, then line $\overline{PM}$ is perpendicular to segment $\overline{AB}$.

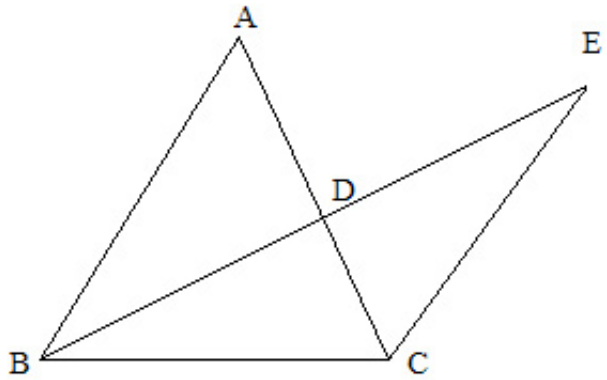
2. (5 points) If $WS = WT$ and $RS = TU$, with $R - S - T - U$, prove that $\angle R \cong \angle U$.



3. 1) Use the Exterior Angle Inequality to prove the following statement: the sum of the measures of any two angles of a triangle is less than 180.

2) Use Saccheri-Legendre Theorem to prove that a triangle can have at most one right or obtuse angle.

4. In the following figure, D is the midpoint of $\overline{AC}$ and $\overline{BE}$ as well. Show that the angle sum of ΔABC equals to the angle sum of ΔEBC.



5. Use Scalene Inequality to prove that the hypotenuse of a right triangle has measure greater than that of either leg.

6. Use the triangle Inequality to prove that for any three points A, B and C,

$$AB - BC \leq AC \leq AB + BC.$$

7. Suppose that $\overline{AM}$ is the median to side $\overline{BC}$ of ΔABC. Prove

$$AM < \frac{1}{2}(AB + AC)$$

using the Triangle Inequality.

8. Suppose that $\overline{AM}$ is the median to side $\overline{BC}$ of ΔABC. $AB = 30$ and $AC = 38$. Use Triangle Inequality to show that

$$4 < AM < 34.$$

9. Prove or disprove: in $\triangle RST$ with angle measures as indicated, $RS \geq RT$.