

**Math 327 Quiz 1 (Section 2.1-2.3) Total points: 10**  
**Instructor: Yi Wang**

Name(Print) \_\_\_\_\_ Section \_\_\_\_\_ Grade \_\_\_\_\_

1. (2 points) The sum of the measures of the interior angles of a triangle is  $180^\circ$ . Find the if-then conditional of this statements, and find its converse and contrapositive.

If a triangle is given, then the sum of the measures of the interior angles is  $180^\circ$ .

Converse: If the sum of the measures of the interior angles (of a polygon) is  $180^\circ$ , then it is a triangle.

Contrapositive: If the sum of the measures of the interior angles (of a polygon) is not  $180^\circ$ , then it is not a triangle.

- 2 2. Given:  $\angle A$  and  $\angle B$  are each  $30^\circ$ , Prove:  $\angle A$  is congruent to  $\angle B$ .

i)  $m\angle A = m\angle B = 30^\circ$

ii)  $\therefore \angle A$  is congruent to  $\angle B$ .

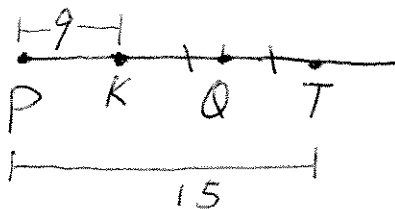
- 2 3. let  $x, y \in \mathbb{R}$ , and  $x^2 + y^2 = 0$ . Prove  $x = y = 0$ .

i) Assume  $x \neq 0$ , then  $x^2 > 0$ , and  $x^2 + y^2 > 0$ , which is a contradiction.

ii) similarly one can draw contradiction from  $y \neq 0$ .

iii)  $\therefore x = y = 0$

- 2 4. Given that  $K, P, Q$ , and  $T$  are points on a line such that  $P-K-Q$  and  $P-K-T$ ,  $Q$  is the midpoint of  $\overline{KT}$ ,  $PK = 9$ , and  $PT = 15$ , find  $QT$ .



$$KT = 15 - 9 = 6$$

$$QT = \frac{1}{2} KT = \frac{1}{2} \times 6 = 3$$