EE5609: Matrix Theory
Assignment-3

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***Abstract*—This document contains a problem based on properties of triangle.**

Download the python codes from

https://github.com/sahilsin/MatrixTheory/tree/master/Assignment3_1/codes

and latex-tikz codes from

https://github.com/sahilsin/MatrixTheory/tree/master/Assignment3_1/figs

1 PROBLEM

In triangle PQR , $PR > PQ$ and PS bisects $\angle QPR$.Prove that $\angle PSR > \angle PSQ$.

2 SOLUTION

Given: $PR > PQ$ and $\angle QPS = \angle RPS$
To Prove: $\angle PSR = \angle PSQ$
Proof:

As PS bisects $\angle QPR$

$$\angle QPS = \angle RPS \tag{2.0.1}$$

Using property angle opposite to larger side is always larger.

$$\angle PQR > \angle PRQ \tag{2.0.2}$$

Using property of sum of exterior angle is equal to sum of opposite interior angles.

$$\angle PSR = \angle PQR + \angle QPS \tag{2.0.3}$$
$$\angle PSQ = \angle RPS + \angle PRQ \tag{2.0.4}$$

Adding 2.0.1 and 2.0.2 and using above properties we get :

$$\angle PQR + \angle QPS > \angle PRQ + \angle RPS \tag{2.0.5}$$
$$\angle PSR > \angle PSQ \tag{2.0.6}$$

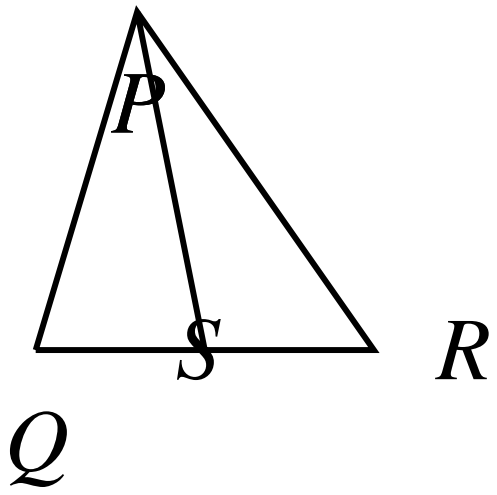

Fig. 0: Right Angled Triangle