Assignment 1
AI1110: Probability and Random Variables
ICSE 2019 Grade 10

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Question: 6 (a)

In the given figure, $\angle PQR = \angle PST = 90°$,PQ = 5 cm and PS = 2 cm.

(i)Prove that $\triangle PQR \sim \triangle PST$.

(ii)Find ratio of Area of $\triangle PQR and Area of quadrilateral SRQT$.

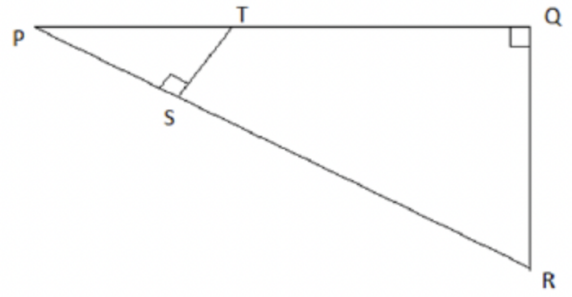

Figure 1: triangle PQR

Solution:-

(i)To prove $\triangle PQR \sim \triangle PST$

consider $\triangle PQR and \triangle PST$

$\angle PQR = \angle PST = 90°$ (given)

$\angle piscommon.$

$\boxed{\therefore \triangle PQR \sim \triangle PST(ByAAAcriterion)}$

(ii) Now,Area of $\triangle PQRis$,

From the given diagram we can say

$$= \frac{PQ}{PS} = \frac{QR}{ST} \tag{1}$$

PQ=5cm(given),QR=5cm(stated above)

$$= \frac{1}{2} \times 5 \times 5 = \frac{25}{2} \tag{2}$$

Area of triangle PST

$$= \frac{1}{2} \times PS \times ST \tag{3}$$

PS=2cm(given), ST=2cm(stated above)

$$= \frac{1}{2} \times 2 \times 2 = \frac{4}{2} \tag{4}$$

Area of Quadrilateral SQRT = Area of triangle PQR - Area of triangle PST

$$= \frac{25}{2} - \frac{4}{2} = \frac{21}{2} \tag{5}$$

Ratio,

$$\frac{25/2}{21/2} = \frac{25}{21} \tag{6}$$

$$\boxed{\therefore ratio = \frac{25}{21}}$$