Assignment 1

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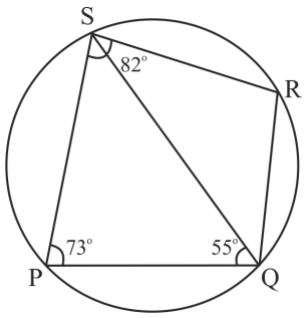
2.(c)



PQRS is a cyclic quadrilateral. Given $\angle QPS = 73^o$, $\angle PQS = 55^o$ and $\angle PSR = 82^o$, calculate:
(i) $\angle QRS$
(ii) $\angle RQS$
(iii) $\angle PRQ$

Solution:

(i) We know that, In a Cyclic quadrilateral, sum of a pair of opposite angles results in 180^o. Hence,

$$\angle QPS + \angle QRS = 180^o$$

$$\rightarrow 73^o + \angle QRS = 180^o$$

$$\Rightarrow \angle QRS = 107^o \quad (1)$$

(ii) Again, from the fact that sum of a pair of opposite angles is 180^o,

$$\angle PSR + \angle PQR = 180^o$$

$$\rightarrow 82^o + \angle PQS + \angle RQS = 180^o$$

$$\rightarrow 82^o + 55^o + \angle RQS = 180^o$$

$$\Rightarrow \angle RQS = 43^O \quad (2)$$

(iii) We know that in a circle, a chord always subtends equal angles at all the points on a particular arc. Consider the chord "PQ",

$$\rightarrow \angle PSQ = \angle PRQ \quad (3)$$

We know that the sum of angles in a triangle equals to 180^o, Consider the triangle $\triangle PQS$,

$$\rightarrow \angle PSQ + \angle SPQ + \angle PQS = 180^o$$

$$\rightarrow \angle PSQ + 73^o + 55^o = 180^o$$

$$\rightarrow \angle PSQ = 52^o$$

Substituting this result in the equation (3),

$$\Rightarrow \angle PRQ = 52^o \quad (4)$$