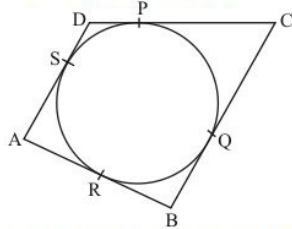




Circles Ex 10.2 Q27

Answer :

Let us first put the given data in the form of a diagram.



From the property of tangents we know that the length of two tangents drawn from the same external point will be equal. Therefore we have,

$$AR = AS$$

Let us represent AR and SA by ' a '.

Similarly,

$$QB = RB$$

Let us represent SD and DP by ' b '

$$PC = CQ$$

Let us represent PC and PQ by ' c '

$$SD = DP$$

Let us represent QB and RB by ' d '

It is given that,

$$AB = 4$$

$$AR + RB = 4$$

$$a + b = 4$$

$$b = 4 - a \dots\dots (1)$$

Similarly,

$$BC = 5$$

That is,

$$b + c = 5$$

Let us substitute for b from equation (1). We get,

$$4 - a + c = 5$$

$$c - a = 1$$

$$c = a + 1 \dots\dots (2)$$

$$CD = 7$$

$$c + d = 7$$

Let us substitute for c from equation (2). We get,

$$a + 1 + d = 7$$

$$a + d = 6$$

In the previous section we had represented AS and SR with ' a ' and SD and DP with ' b '. We shall now put AS in place of ' a ' and SD in place of ' d '. We get,

$$AS + SD = 6$$

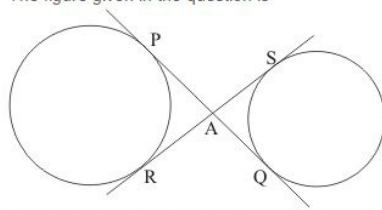
$$AD = 6 \text{ cm}$$

Therefore, the length of the fourth side of the quadrilateral is 6 cm.

Circles Ex 10.2 Q28

Answer :

The figure given in the question is



We know from the property of tangents that the length of two tangents drawn from a common external point will be equal. Therefore,

$$PA = RA \dots\dots (1)$$

$$AQ = AS \dots\dots (2)$$

Let us add equation (1) and (2)

$$PA + AQ = RA + AS$$

$$PQ = RS$$

Thus we have proved that $PQ = RS$.

***** END *****