9.10.5.3

Question : In ,$\angle PQR = 100^\circ$,where P, Q and R are points on a circle with centre O.Find $\angle OPR$.

Solution :

Input Parameters	Description	Value
O	Center(at origin)	**0**
r	Radius	1
θ	-	100°
α	-	165.4°
β	-	5°

Table 1: Table of input parameters

Output Parameters	Description	Value
Q	Point	$\begin{pmatrix} 0.17 \\ 0.98 \end{pmatrix}$
P	Point	$\begin{pmatrix} -0.96 \\ 0.25 \end{pmatrix}$
R	Point	$\begin{pmatrix} 1 \\ 0.087 \end{pmatrix}$

Table 2: Table of output parameters

For getting the value of the $\angle OPR$

$$\cos\angle OPR = \frac{(\mathbf{O}-\mathbf{P})^\top(\mathbf{R}-\mathbf{P})}{||\mathbf{O}-\mathbf{P}||||\mathbf{R}-\mathbf{P}||} \tag{1}$$

$$\angle OPR = 10^\circ \tag{2}$$

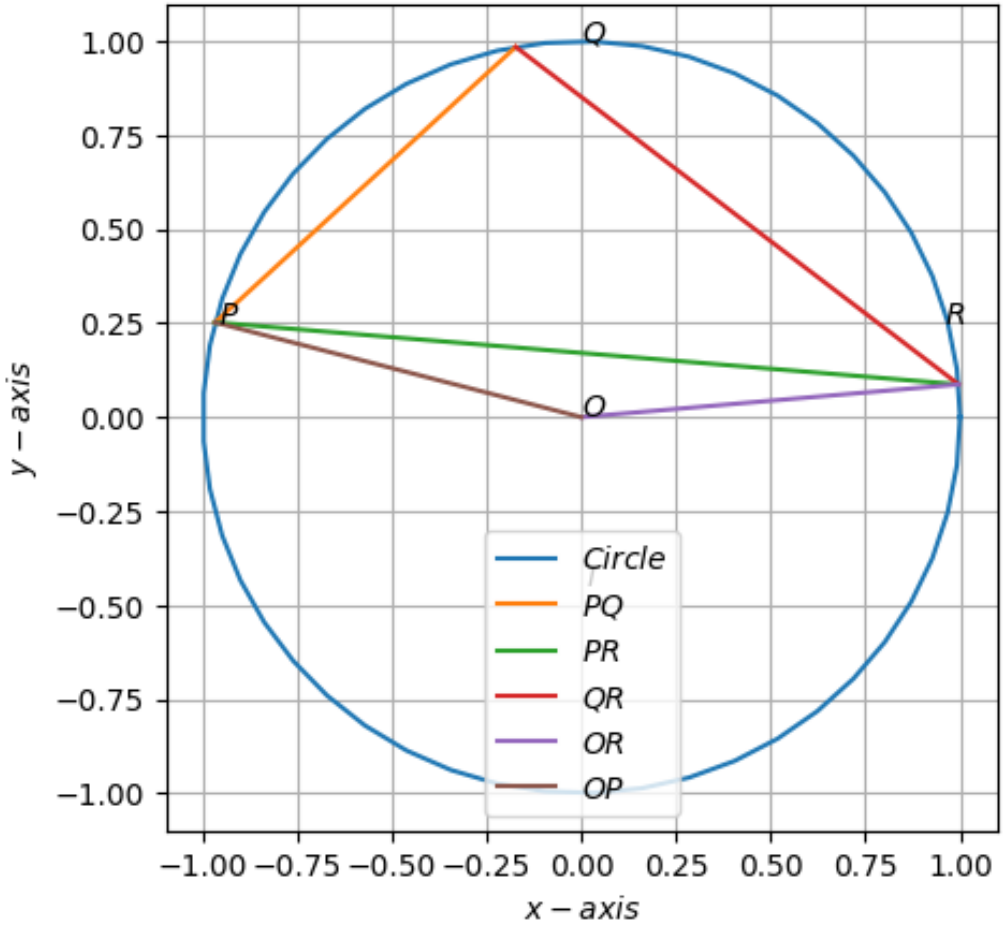
Q
P
R
O
Circle
PQ
PR
QR
OR
OP
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
−1.00
−1.00 −0.75 −0.50 −0.25 0.00 0.25 0.50 0.75 1.00
y − axis
x − axis

Figure 1: