AI1100 ASSIGNMENT1

AI21BTECH11016

Problem 4-C

Draw a circle of radius 4 cm. Mark the centre as O. Mark a point P outside the circle at distance of 7 cm from the centre. Construct two tangents to the circle from the external point P. Measure and write down the length of any one tangent.

Solution: The input parameters for this construction are available in table1.

Symbol	Value	Description
r	4	Radius
d	7	Distance of P from the centre of circle
sinθ	r/d	Angle b/w the tangent from P and d
P	(d, 0)	Point $(0, 7)$
O	$\vec{O}$	Origin
Qi	$rcot\theta(cos\theta, \pm sin\theta)$	Points of Contact

TABLE I

1) Drawing a circle of radius $4cm$. Taking a point P outside the circle at a distance of $7cm$ from the centre of the circle and constructing a pair of tangents to the circle from that point using Python.

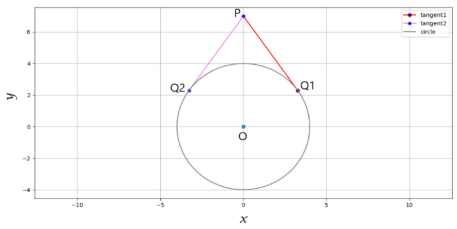

Fig. 1.

Consider $\triangle OQ2P$,
$\angle OQ2P = \Pi/2$,
From Pythogorean Theorem,

$\Rightarrow$OP$^2 = OQ2^2 + PQ2^2$
OP = 7 and OQ2 = 4
$\Rightarrow$PQ2 = $\sqrt{33}$

Therefore, the length of tangent from P is $\sqrt{33}$