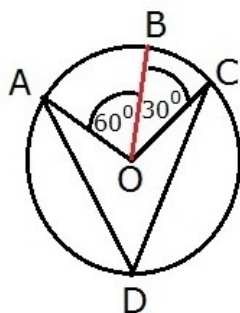


①



ex 10.5

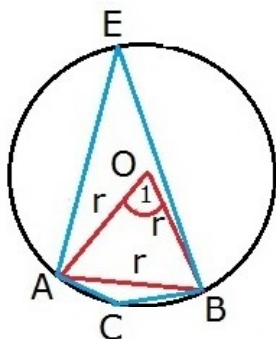
Sol $\angle AOC = \angle AOB + \angle BOC$
 $= 60^\circ + 30^\circ$
 $= 90^\circ$

$\angle AOC = 2\angle ADC$ [central $\angle = 2$ inscribed \angle]

$\frac{90}{2} = \angle ADC$

$\Rightarrow \angle ADC = 45^\circ$

②



to find $\angle C, \angle E$

Solution $AB = r$
 $OA = OB = r$ (radii)
 $\triangle OAB$ is equilateral
 [$OA = OB = AB = r$]

$\therefore \angle A = 60^\circ$ [each \angle of equilateral \triangle]

$\angle A = 2\angle E$ [central $\angle = 2$ inscribed \angle]

$\frac{60}{2} = \angle E$

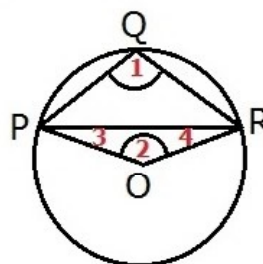
$\Rightarrow \angle E = 30^\circ$

$\angle C + \angle E = 180^\circ$ [opposite \angle s of a cyclic \square]

$\angle C + 30^\circ = 180^\circ$

$\Rightarrow \angle C = 180^\circ - 30^\circ$
 $= 150^\circ$

③



to find $\angle OPR$

Sol -

Reflex $\angle POR = 2\angle Q$
 $= 2 \times 100^\circ$
 $= 200^\circ$

$\angle Q + \text{Reflex } \angle POR = 360^\circ$

$\angle Q + 200 = 360$

$\Rightarrow \angle Q = 360^\circ - 200^\circ$
 $= 160^\circ$

In $\triangle OPR$

$OP = OR$ (radii of same \odot)

$\Rightarrow \angle 4 = \angle 3$ (isosceles \triangle property)

$\angle 3 + \angle 4 + \angle 2 = 180^\circ$

$\angle 3 + \angle 3 + 160 = 180$ [$\because \angle 3 = \angle 4$]

$\Rightarrow 2\angle 3 = 180^\circ - 160^\circ$

$\Rightarrow \angle 3 = \frac{20}{2}$

$\Rightarrow \angle OPR = 10^\circ$