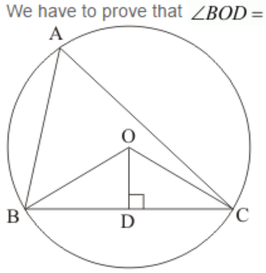
Circles Ex 16.4 Q5

Answer :

We have to prove that $\angle BOD = \angle A$



Since Circum center is the intersection of $\perp^r$ bisectors of each side of the triangle

Now according to figure A, B, C are the vertices of ΔABC

In ΔBOC OD is $\perp^r$ bisector of BC

So, BD = CD

$BO = OC$

And,

$\angle BDO = \angle ODC = 90^0$

Therefore,

$\Delta BDO \cong \Delta ODC$

$\Rightarrow \angle BOD = DOC$

We know that angle formed any chord of the circle at the center is twice of the angle formed at the circumference by same chord

Therefore,

$$\angle BAC = \frac{1}{2}\angle BOC$$

$$\Rightarrow \angle BAC = \frac{1}{2} \times 2\angle BOD$$

$$\Rightarrow \angle BAC = \angle BOD$$

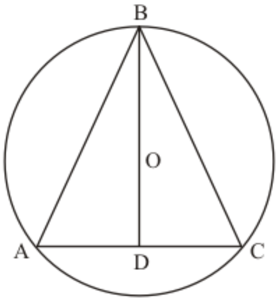
Hence

$\boxed{\angle BOD = \angle A}$ Proved.

Circles Ex 16.4 Q6

Answer :

It is given that, $\angle ABC$ is on circumference of circle BD is passing through center



Construction: - meet A and C to form AC and increase OB to D that the point of $\perp^r$ of BC

Now in ΔABD and ΔCBD we have

$AD = DC$ (Because D is $\perp^r$ bisector)

So $\angle ADB = \angle CDB = 90^0$

$BD = BD$ (Common in both triangles)

Then triangles are congruent.

Hence $\boxed{AB = BC}$

*********** END **********