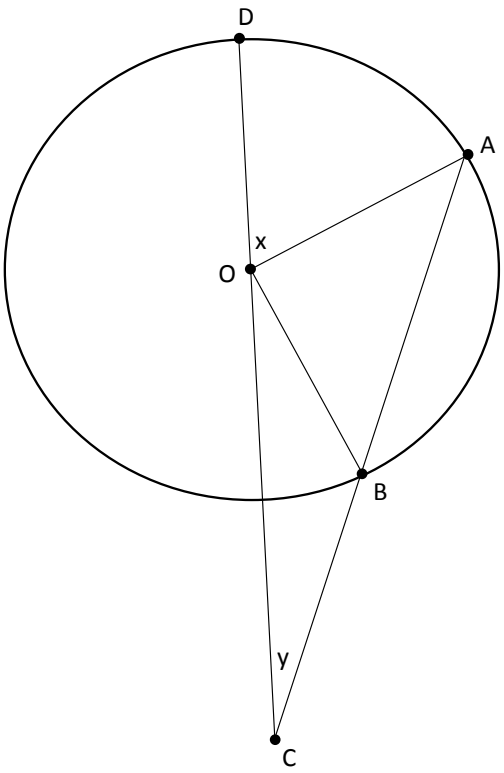
Answer on question 37840 – Math – Geometry

AB is a chord of a circle with center O.AB is produced to C, such that BC=OB.CO is joined and produced to meet the circle in D. If Angle ACD=Y and Angle AOD=X, prove that X=3Y.

Proving



OA=OB=OD as a radius of the circle;

OB=BC from the task. Therefore the triangle COB is isosceles and angle COB=OCB=y. As we know the sum of the angles of triangle equals 180 degree. We will use this statement a couple times. Angle CBO=180-2y.

Angle OBA=180-CBO=180-180+2y=2y.

The triangle AOB is isosceles too. Therefore we have that angle BAO=OBA=2y.

Angle AOB=180-OAB-ABO=180-2y-2y=180-4y;

The angle AOD=180-AOB-COB=180-180+4y-y=3y=x.

QED.