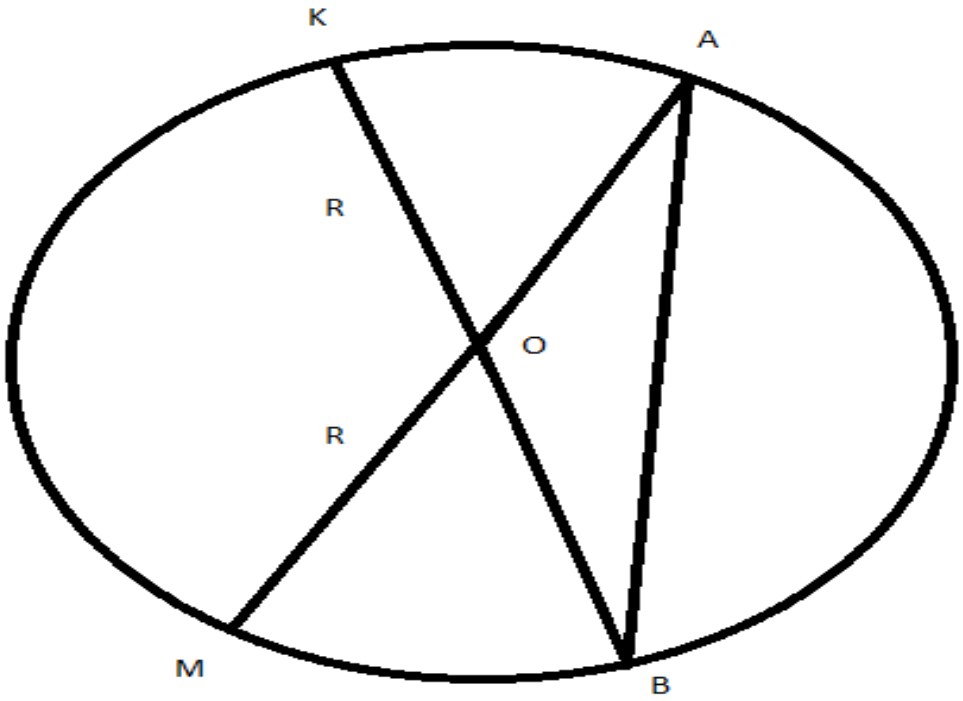
Answer on Question #58251 – Math – Algebra

Question

A circle with 0,and two points on the circumference a and b. Angle OAB=2y ,ABO=x+20 and BOA =3x Form two simultaneous equations.

Solution



$\angle AOB = 3x$

$\angle OAB = 2y$

$\angle ABO = x + 20$

Angles $\angle AOB$, $\angle OAB$ and $\angle ABO$ are inner angles of triangle AOB, hence the sum of their measures is equal to $180°$:

$2y + x + 20 + 3x = 180°.$

Triangle AOB is isosceles , because

$AO = OB = R => \angle OAB = \angle ABO =>$

$=> 2y = x + 20.$

Simultaneous equations will be

$$\begin{cases} 2y + x + 20 + 3x = 180° \\ 2y = x + 20 \end{cases}$$

$$\begin{cases} 2x + 40 + 3x = 180° \\ y = \frac{x+20}{2} \end{cases}$$

$$\begin{cases} 5x = 140° \\ y = \frac{x+20}{2} \end{cases}$$

$$\begin{cases} x = 28° \\ y = 24° \end{cases}$$