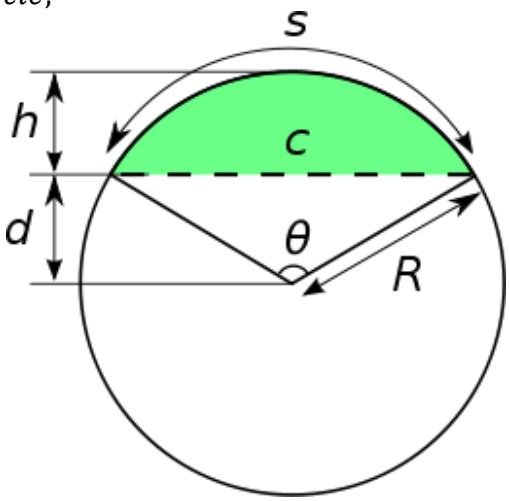
Answer on Question #48595 – Math – Geometry

If a central angle of measure 30 degrees is subtended by a circular arc of length 6 meters, as is illustrated below, how many meters in length is the radius of the circle?

Solution:

$\theta = 30° - central\ angle\ of\ the\ circle;$
$S = 6m - length\ of\ the\ circular\ arc;$
$R - radius\ of\ the\ circle;$



Formula for the length of the circular arc:

$$S = \frac{\theta}{180°}\pi R$$

Thus, the radius is equal to

$$R = \frac{S}{\frac{\theta}{180°}\pi} = \frac{180° \cdot S}{\theta\pi} = \frac{180° \cdot 6m}{30° \cdot 3.14} = 11.5\ m$$

Answer: radius of the circle is equal to $11.5\ m$.