

The diagram shows points A and B on a circle with centre O and radius r. The tangents to the circle at A and B meet at T. The shaded region is bounded by the minor arc AB and the lines AT and BT. Angle AOB is 2θ radians.

In the case where the area of the sector AOB is the same as the area of the shaded region, show that $\tan \theta = 2\theta$.

In the case where $r = 8 \text{ cm}$ and shaded region.			[3]
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