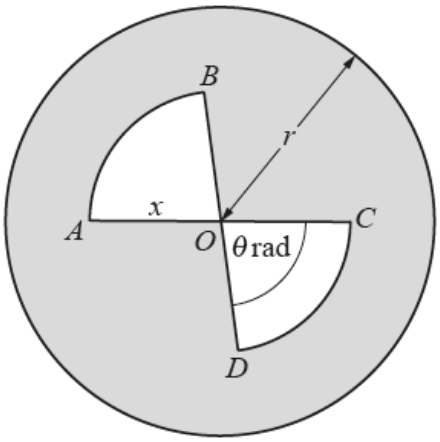
Circular measure – 2022 Nov IGCSE 0606 Additional Math

1. Nov/2022/Paper_0606_11/No.7



The diagram shows a circle with centre O and radius r. OAB and OCD are sectors of a circle with centre O and radius x, where $0 < x \leqslant r$. Angle AOB = angle $COD = \theta$ radians, where $0 < \theta < \pi$.

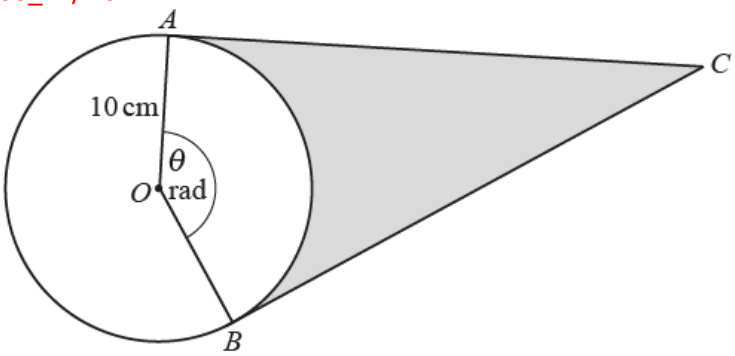
(a) Find, in terms of r, x and θ, the perimeter of the shaded region. [3]

(b) Find, in terms of r, x and θ, the area of the shaded region. [1]

It is given that x can vary and that r and θ are constant.

(c) Write down the least possible area of the shaded region in terms of r and θ. [2]

2. Nov/2022/Paper_0606_12/No.7



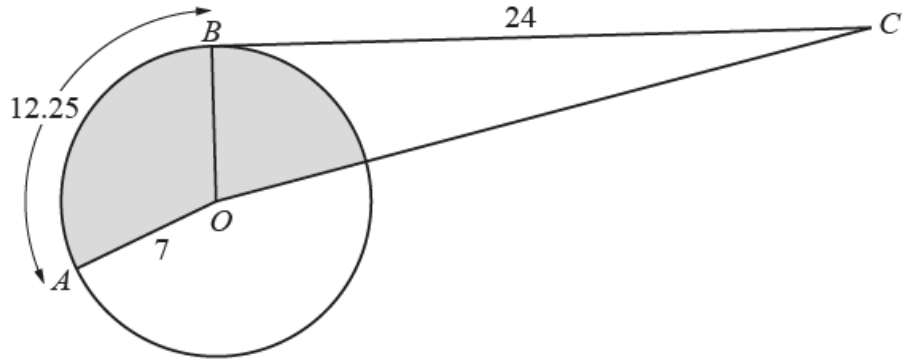
The diagram shows a circle, centre O, radius 10 cm. The points A and B lie on the circumference of the circle. The tangent at A and the tangent at B meet at the point C. The angle AOB is θ radians. The length of the minor arc AB is 28 cm.

(a) Find the value of θ. [1]

(b) Find the perimeter of the shaded region. [3]

3. Nov/2022/Paper_0606_13/No.8

In this question all lengths are in metres.



The diagram shows a circle, centre O, radius 7. The points A and B lie on the circumference of the circle. The line BC is a tangent to the circle at the point B such that the length of BC is 24. The length of the minor arc AB is 12.25.

(a) Find the obtuse angle AOB, giving your answer in radians. [1]

(b) Find the perimeter of the shaded region. [4]

(c) Find the area of the shaded region. [2]