2

In the diagram, $OADC$ is a sector of a circle with centre O and radius 3 cm. AB and CB are tangents to the circle and angle $ABC = \frac{1}{3}\pi$ radians. Find, giving your answer in terms of $\sqrt{3}$ and π,

  (i) the perimeter of the shaded region,   [3]

 (ii) the area of the shaded region.   [3]