6

The diagram shows a motif formed by the major arc AB of a circle with radius r and centre O, and the minor arc AOB of a circle, also with radius r but with centre C. The point C lies on the circle with centre O.

(a) Given that angle $ACB = k\pi$ radians, state the value of the fraction k. [1]

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(b) State the perimeter of the shaded motif in terms of π and r. [1]

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(c) Find the area of the shaded motif, giving your answer in terms of π, r and $\sqrt{3}$. [5]

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