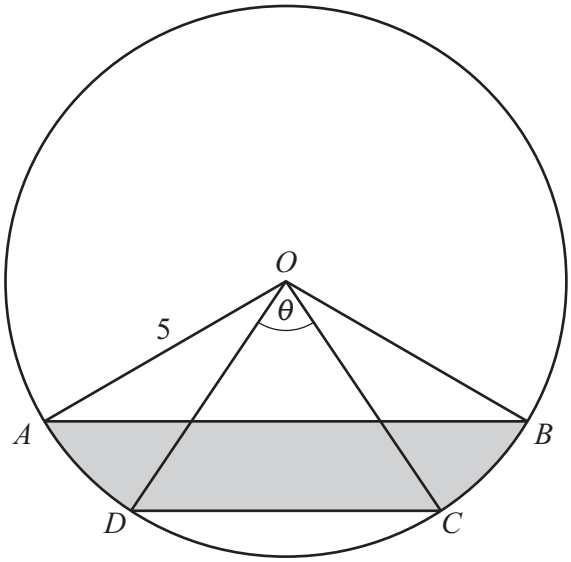
6 In this question, all lengths are in metres and all angles are in radians.



The diagram shows a circle with centre O and radius 5. The points A, B, C and D lie on the circumference of the circle. Angle $DOC = \theta$. Angle AOD = angle $COB = 0.5$. The length of the minor arc DC is 3.75.

(a) Show that $\theta = 0.75$. [1]

(b) Find the perimeter of the shaded region. [5]

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(c) Find the area of the shaded region. [3]

7 **(a)** The line $y = 3x - 2$ intersects the curve $2x^2 - xy + y^2 = 2$ at the points A and B. The point C with coordinates $\left(k, \frac{7}{8}\right)$ lies on the perpendicular bisector of the line AB. Find the exact value of k.

[9]

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