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6. The line with equation $y = 4x + c$, where c is a constant, meets the curve with equation $y = x(x - 3)$ at only one point.

(a) Find the value of c.

(4)

(b) Hence find the coordinates of the point of intersection.

(3)

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Question 6 continued

Q6

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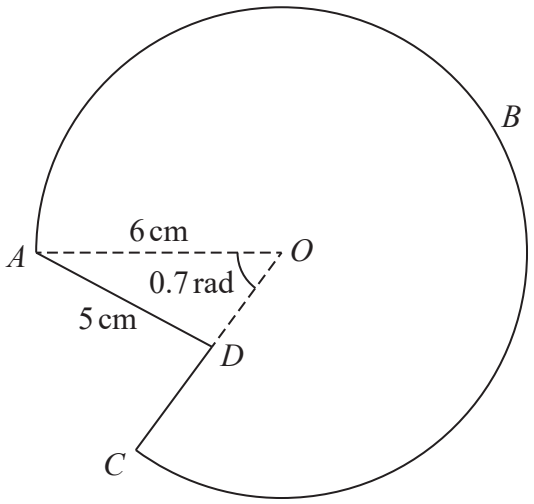
7.



Not to scale

Figure 2

The shape *ABCDA* consists of a sector *ABCOA* of a circle, centre *O*, joined to a triangle *AOD*, as shown in Figure 2.

The point *D* lies on *OC*.

The radius of the circle is 6 cm, length *AD* is 5 cm and angle *AOD* is 0.7 radians.

(a) Find the area of the sector *ABCOA*, giving your answer to one decimal place.

(3)

Given angle *ADO* is obtuse,

(b) find the size of angle *ADO*, giving your answer to 3 decimal places.

(3)

(c) Hence find the perimeter of shape *ABCDA*, giving your answer to one decimal place.

(4)

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