Answer all TEN questions.

Write your answers in the spaces provided.

You must write down all stages in your working.
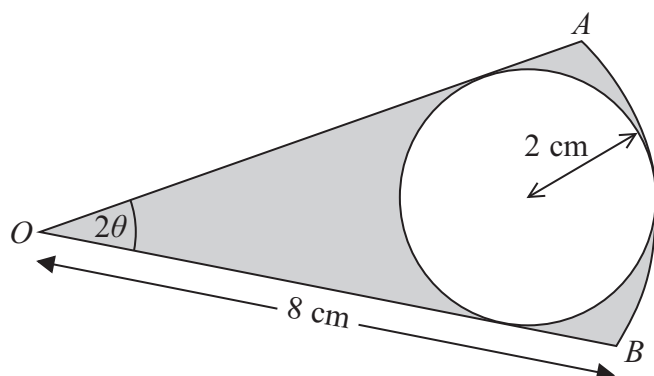
1

Figure 1

Figure 1 shows the sector, AOB of a circle with centre O and radius 8 cm. A circle of radius 2 cm touches the lines OA and OB and the arc AB. Angle AOB is 2θ radians, $0 < \theta < \dfrac{\pi}{4}$.

(a) Find, to 4 significant figures, the value of θ

(3)

(b) Find, to 3 significant figures, the area of the region shaded in Figure 1.

(3)

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Question 1 continued

(Total for Question 1 is 6 marks)