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5.

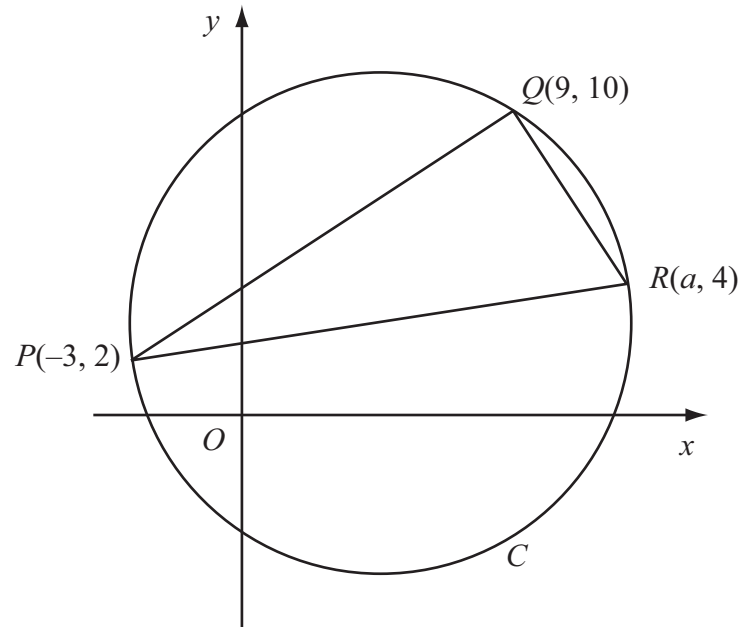


Figure 2

The points  $P(-3, 2)$ ,  $Q(9, 10)$  and  $R(a, 4)$  lie on the circle  $C$ , as shown in Figure 2. Given that  $PR$  is a diameter of  $C$ ,

(a) show that  $a = 13$ , (3)

(b) find an equation for  $C$ . (5)

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7.

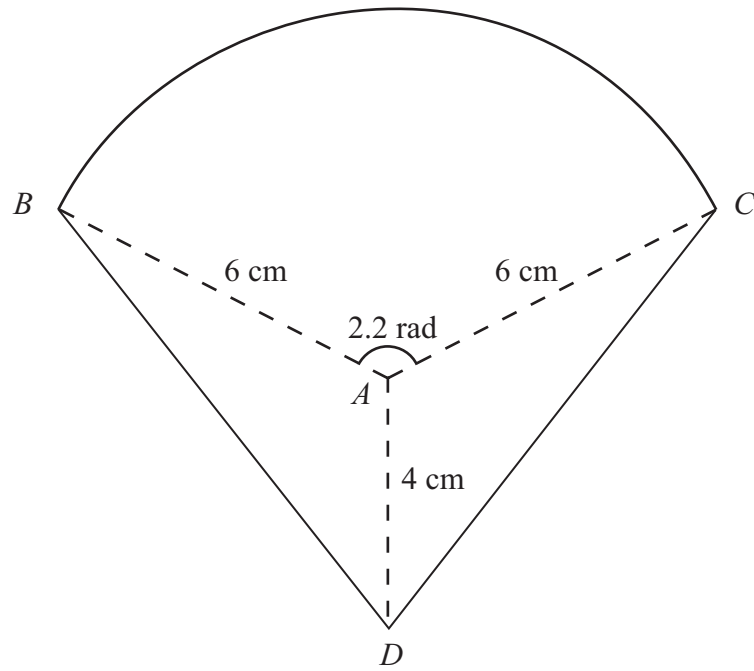


Figure 3

The shape  $BCD$  shown in Figure 3 is a design for a logo.

The straight lines  $DB$  and  $DC$  are equal in length. The curve  $BC$  is an arc of a circle with centre  $A$  and radius 6 cm. The size of  $\angle BAC$  is 2.2 radians and  $AD = 4$  cm.

Find

- (a) the area of the sector  $BAC$ , in  $\text{cm}^2$ , (2)
- (b) the size of  $\angle DAC$ , in radians to 3 significant figures, (2)
- (c) the complete area of the logo design, to the nearest  $\text{cm}^2$ . (4)

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