Daily Question – Pure Mathematics - Day 4

Topic: Radian

Day 4 Question 1

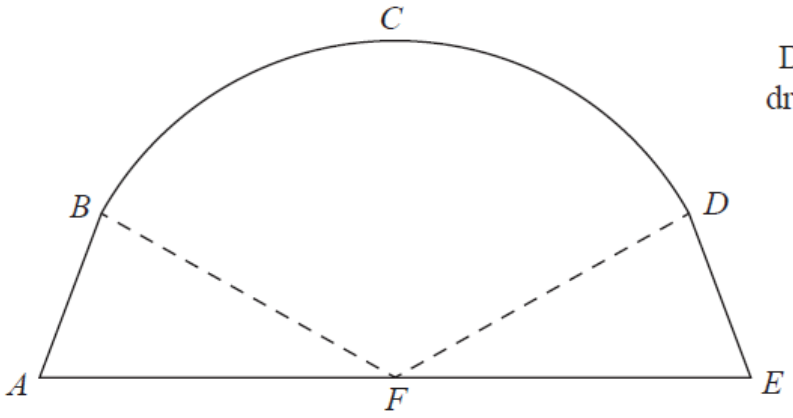


Diagram not drawn to scale

Figure 1

Figure 1 is a sketch representing the cross-section of a large tent $ABCDEF$.
AB and DE are line segments of equal length.
Angle FAB and angle DEF are equal.
F is the midpoint of the straight line AE and FC is perpendicular to AE.
BCD is an arc of a circle of radius 3.5 m with centre at F.
It is given that

$$AF = FE = 3.7\text{m}$$
$$BF = FD = 3.5\text{m}$$
$$\text{angle } BFD = 1.77 \text{ radians}$$

Find

(a) the length of the arc BCD in metres to 2 decimal places,

(2)

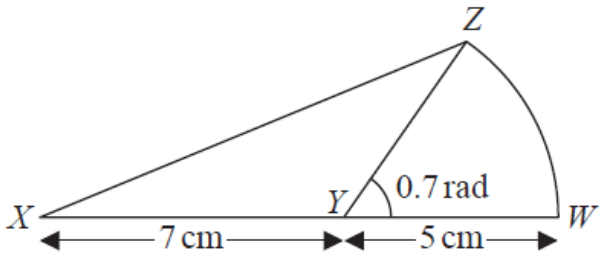
(b) the area of the sector $FBCD$ in m^2 to 2 decimal places,

(2)

(c) the total area of the cross-section of the tent in m^2 to 2 decimal places.

(4)

Day 4 Questions 2



Not to scale

Figure 2

Figure 2 shows a flag $XYWZX$.

The flag consists of a triangle XYZ joined to a sector ZYW of a circle with radius 5 cm and centre Y.

The angle of the sector, angle ZYW, is 0.7 radians.

The points X, Y and W lie on a straight line with $XY = 7$ cm and $YW = 5$ cm.

Find

(a) the area of the sector ZYW in cm^2,

(2)

(b) the area of the flag, in cm^2, to 2 decimal places,

(3)

(c) the length of the perimeter, $XYWZX$, of the flag, in cm to 2 decimal places.

(4)