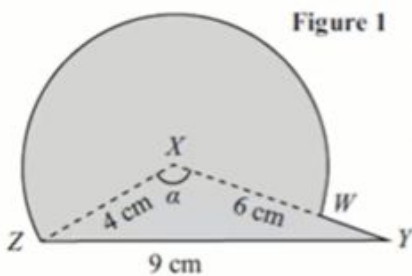




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## Radians | Past Paper Question | C2 Edexcel Jan 2013 Q7(a)(b)



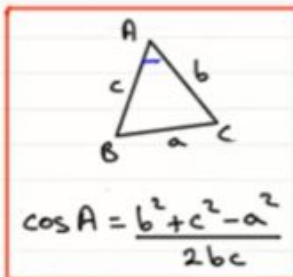
The triangle  $XYZ$  in Figure 1 has  $XY = 6$  cm,  $YZ = 9$  cm,  $ZX = 4$  cm and angle  $ZXY = \alpha$ .

The point  $W$  lies on the line  $XY$ .

The circular arc  $ZW$ , in Figure 1 is a major arc of the circle with centre  $X$  and radius 4 cm.

(a) Show that, to 3 significant figures,  $\alpha = 2.22$  radians.

(b) Find the area, in  $\text{cm}^2$ , of the major sector  $XZWX$ .



$$\begin{aligned}\cos \alpha &= \frac{4^2 + 6^2 - 9^2}{2(4)(6)} \\ &= -0.6041\dots \\ \therefore \alpha &= \cos^{-1}(-0.6041\dots) \\ &= 2.2195\dots \\ &= 2.22 \text{ rads (3sf)}\end{aligned}$$

$$\begin{aligned}A &= \frac{\theta}{2\pi} \times \pi r^2 \\ &= \frac{\theta r^2}{2}\end{aligned}$$

$$\begin{aligned}\text{Area} &= \frac{(2\pi - 2.2195\dots)}{2\pi} \times \pi (4)^2 \\ &= 32.5094\dots \\ &= 32.5 \text{ cm}^2 \text{ (3sf)}\end{aligned}$$

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