

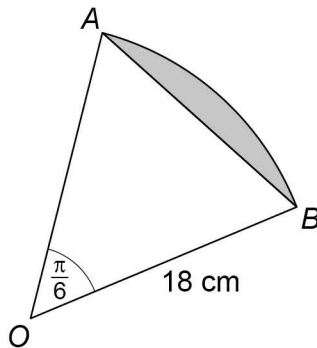
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The diagram below shows a sector of a circle  $OAB$ .

The chord  $AB$  divides the sector into a triangle and a shaded segment.

Angle  $AOB$  is  $\frac{\pi}{6}$  radians.

The radius of the sector is 18 cm.



Show that the area of the shaded segment is

$$k(\pi - 3) \text{ cm}^2$$

where  $k$  is an integer to be found.

[3 marks]