

## Warm Up

1. The diagram below shows a circle centre O, with radius  $r$ . The length of arc ABC is  $3\pi$  cm and  $\hat{AOC} = \frac{2\pi}{9}$ .

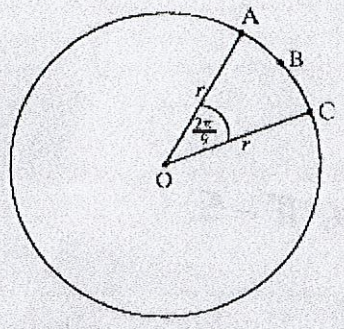


diagram not to scale

$$\frac{9}{2\pi} \cdot 3\pi = \frac{2\pi}{9} r \cdot \frac{9}{2\pi}$$

$$\frac{27}{2} = r$$

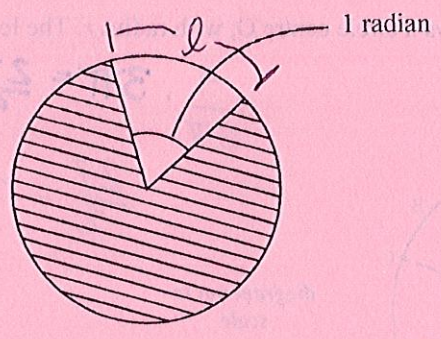
- (a) Find the value of  $r$ .  $r = \frac{27}{2}$  or 13.5 cm (2)

- (b) Find the perimeter of sector OABC.  $\frac{27}{2} + \frac{27}{2} + 3\pi = 27 + 3\pi$  cm (2)

- (c) Find the area of sector OABC.  $\frac{1}{2} \cdot \frac{2\pi}{9} \left(\frac{27}{2}\right)^2 = \frac{81\pi}{4}$  or 63.6 or  $20.25\pi$  cm<sup>2</sup> (Total 6 marks)

2. The diagram shows a circle of radius 5 cm.

$r = 5$   
 $\theta = 1$   
 $l = \theta r$   
 $l = 1(5)$   
 $l = 5$



~~perimeter~~ large arc length =  $10\pi - 5$

Find the perimeter of the shaded region.

$$5 + 5 + (10\pi - 5) = 10\pi + 5 \text{ cm} \quad (\text{Total 4 marks})$$

3. Find the coefficient of  $x^3$  in the expansion of  $(2x^2 - \frac{3}{x})^6$ .

$$\binom{6}{r} (2x^2)^{6-r} \left(-\frac{3}{x}\right)^r$$

$$\binom{6}{r} 2^{6-r} (-3)^r x^{12-3r}$$

$$12 - 3r = 3$$

$$r = 3$$

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