Question

The diagram shows a sector of a circle of radius r cm containing angle Ɵ radians. The area of the sector is Acm2 and the perimeter of the sector is 50 cm.

a. Find Ɵ in terms of r.
b. Show that A = 25r – r2

Solution

a.

$$S = \frac{\alpha \cdot R^2}{2}$$

$$A = \frac{\theta \cdot r^2}{2}$$

$$\theta = \frac{2A}{r^2}$$

b.

$$P = \alpha \cdot r + 2r$$

$$50 = \theta \cdot r + 2r$$

$$50 = \frac{2A}{r^2} r + 2r$$

$$25 = \frac{A}{r} + r$$

$$A = 25r - r^2$$

Answer:

a. $\theta = \frac{2A}{r^2}$
b. $A = 25r - r^2$