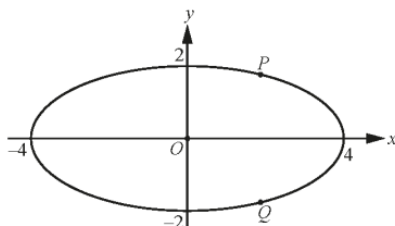


(b)



NOT TO
SCALE

P(2,k) and Q(2,-k) are points on the curve $\frac{x^2}{16} + \frac{y^2}{4} = 1$

(i) Find the value of k

(ii)

Calculate angle POQ

(c)

The area enclosed by a curve with equation $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is πab

(i) Find the area enclosed by the curve $\frac{x^2}{16} + \frac{y^2}{4} = 1$.

Give your answer as a multiple of π

(ii)

A curve mathematically similar to the one in diagram intersects the x-axis at (12,0) and (-12,0)

Work out the area enclosed by this curve giving your answer as a multiple of π .

Solution

(a)

(i)

The slope m of the line passing through A(4,0) and B(0,2)

$$m = \frac{2-0}{0-4} = -\frac{2}{4} = -\frac{1}{2}$$

Equation of line with slope $m = -\frac{1}{2}$ and intercepting the y-axis at B = (0, 2)

$$y = -\frac{1}{2}x + 2$$