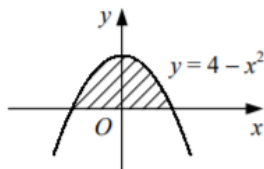




1. The diagram shows the curve with equation $y = 4 - x^2$.



- a. Find the coordinates of the points where the curves crosses the x -axis. (2)
b. Find the area of the shaded region enclosed by the curve and the x -axis. (3)

- 2a. Sketch the curve with the equation $y = x^2 + 4x$. (4)

- b. Find the area of the region enclosed by the curve, the y -axis and the line $x = 2$. (3)

Solutions

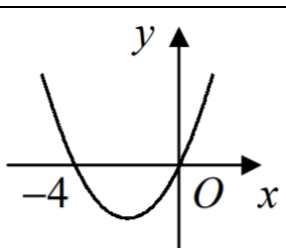
1a.

$y = 0$ $4 - x^2 = 0$ $x^2 = 4$	M1
$x = \pm 2$	M1
$(-2, 0)$ and $(2, 0)$	

1b.

$\int_{-2}^2 (4 - x^2) dx = [4x - \frac{1}{3}x^3]_{-2}^2$	M1
$= (8 - \frac{8}{3}) - (-8 + \frac{8}{3})$	M1
$= \frac{32}{3}$	M1

2a.

$x^2 + 4x = 0$ $x(x + 4) = 0$	M1
$x = -4$ $x = 0$	M1
<p>Shape M1 Co-ordinates $(-4, 0)$ and $(0, 0)$ marked. M1</p> 	

2b.

$\int_0^2 (x^2 + 4x) dx = [\frac{1}{3}x^3 + 2x^2]_0^2$	M1
$= (\frac{8}{3} + 8) - (0)$	M1
$= \frac{32}{3}$	M1