



The diagram shows part of the curve $y = \sqrt{9 - 2x^2}$. The point $P(2, 1)$ lies on the curve and the normal to the curve at P intersects the x -axis at A and the y -axis at B .

- (i) Show that B is the mid-point of AP .

[6]

The shaded region is bounded by the curve, the y -axis and the line $y = 1$.

- (ii) Find, showing all necessary working, the exact volume obtained when the shaded region is rotated through 360° about the y -axis.

[5]