



The diagram shows part of the graph of $y = \frac{18}{x}$ and the normal to the curve at $P(6, 3)$. This normal meets the x -axis at R . The point Q on the x -axis and the point S on the curve are such that PQ and SR are parallel to the y -axis.

(i) Find the equation of the normal at P and show that R is the point $(4\frac{1}{2}, 0)$. [5]

(ii) Show that the volume of the solid obtained when the shaded region $PQRS$ is rotated through 360° about the x -axis is 18π . [4]