

15.

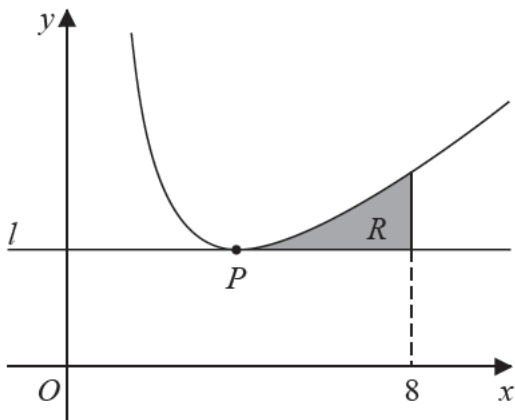


Figure 4

Figure 4 shows a sketch of the curve with equation

$$y = \frac{3x}{2} + \frac{32}{\sqrt{x^3}} \quad x > 0$$

The point P is the only stationary point on the curve.

(a) Show that the x coordinate of P is 4

(4)

The line l is parallel to the x -axis and passes through the point P

The region R , shown shaded in Figure 4, is bounded by the curve, the line l and the line with equation $x = 8$

(b) Use algebraic integration to find the exact area of R , writing your answer in the form $a + b\sqrt{2}$ where a and b are integers to be found.

(5)