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2. A curve has equation

$$y = \sqrt{9 - x^2} \qquad 0 \leqslant x \leqslant 3$$

(a) Using calculus, show that the length of the curve is $\frac{3\pi}{2}$

(4)

The curve is rotated through 2π radians about the x-axis.

(b) Using calculus, find the exact area of the surface generated.

(3)

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Q2

(Total 7 marks)