5. A curve has parametric equations

$$x = 4e^{\frac{1}{2}t} \qquad y = e^{t} - t \qquad 0 \leqslant t \leqslant 4$$

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

Show that the area of the curved surface generated is

$$\pi(e^{8} + Ae^{4} + B)$$

where A and B are constants to be determined.

(7)

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