

2.

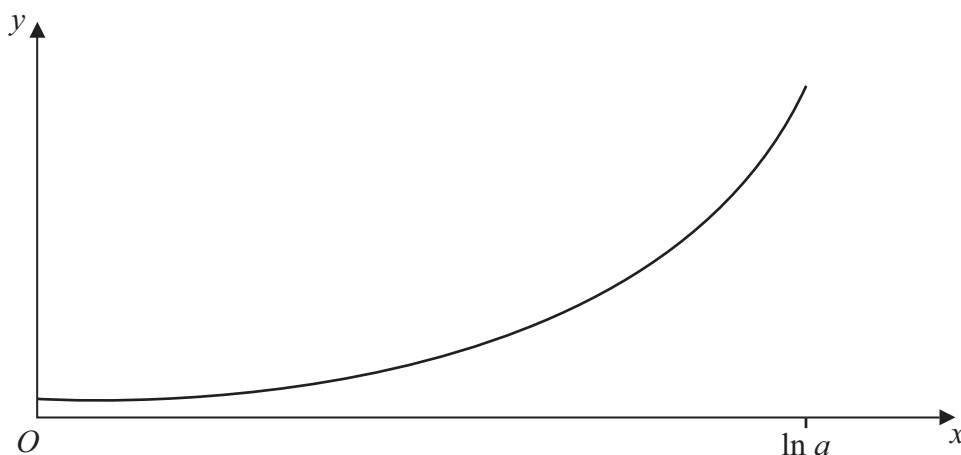


Figure 1

The curve C , shown in Figure 1, has equation

$$y = \frac{1}{3} \cosh 3x, \quad 0 \leq x \leq \ln a$$

where a is a constant and $a > 1$

Using calculus, show that the length of curve C is

$$k\left(a^3 - \frac{1}{a^3}\right)$$

and state the value of the constant k .

(6)



