

10.

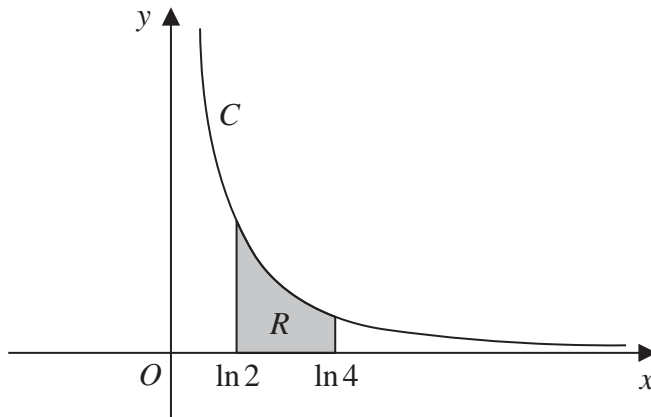


Figure 4

Figure 4 shows a sketch of the curve  $C$  with parametric equations

$$x = \ln(t + 2), \quad y = \frac{1}{t + 1}, \quad t > -\frac{2}{3}$$

(a) State the domain of values of  $x$  for the curve  $C$ .

(1)

The finite region  $R$ , shown shaded in Figure 4, is bounded by the curve  $C$ , the line with equation  $x = \ln 2$ , the  $x$ -axis and the line with equation  $x = \ln 4$

(b) Use calculus to show that the area of  $R$  is  $\ln\left(\frac{3}{2}\right)$ .

(8)