**14.**

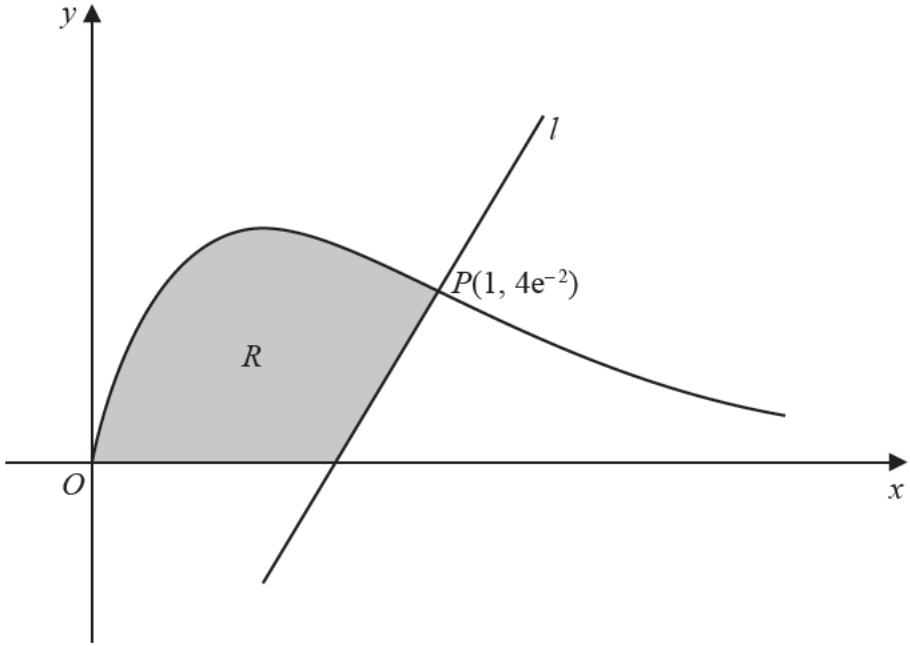


**Figure 7**

Figure 7 shows a sketch of the curve with equation

$$y = 4xe^{-2x} \qquad x \geqslant 0$$

The line $l$ is the normal to the curve at the point $P(1, 4e^{-2})$

The finite region $R$, shown shaded in Figure 7, is bounded by the curve, the line $l$, and the $x$-axis.

Find the exact value of the area of $R$.

(*Solutions based entirely on graphical or numerical methods are not acceptable.*)

**(10)**