

1. Express

$$x = e^{-2t}, y = 6e^{5t}$$

in the form $y = f(x)$ by eliminating the parameter.

Solution. Since $x = e^{-2t}$, we have $-2t = \ln x$, so $t = -\frac{1}{2} \ln x$. Substituting t into $y = 6e^{5t}$, we get

$$y = 6e^{5t} = 6e^{5(-\frac{1}{2} \ln x)} = 6(e^{\ln x})^{(-\frac{5}{2})} = 6x^{-\frac{5}{2}},$$

where $x > 0$. □