Let's suppose $\tau_1 >> \tau_2$
Then we can set $\tau = \tau_1$

We can also write:

$$\tau_2 = \frac{\tau_1}{k} = \frac{\tau}{k}$$

with k >> 1

Substituting now in your equation:

$$V_{out} = V_{DD} \cdot \frac{\tau \cdot e^{-\frac{t}{\tau}} - \frac{\tau}{k} \cdot e^{-k \cdot \frac{t}{\tau}}}{\tau - \frac{\tau}{k}}$$

rearranging:

$$V_{out} = V_{DD} \cdot \frac{\cancel{\tau} \cdot e^{-\frac{t}{\tau}} \cdot \left(1 - \frac{1}{k} \cdot e^{-k}\right)}{\cancel{\tau} \cdot \left(1 - \frac{1}{k}\right)}$$

Now, if $k \to \infty$ then $1/k \to 0$ and $e^{-k} \to 0$ then the terms in the brackets at both numerator and denominator $\to 1$ from which:

$$V_{out} = V_{DD} \cdot e^{-\frac{t}{\tau}}$$

We will obtain the same result if $\tau_2 >> \tau_1$