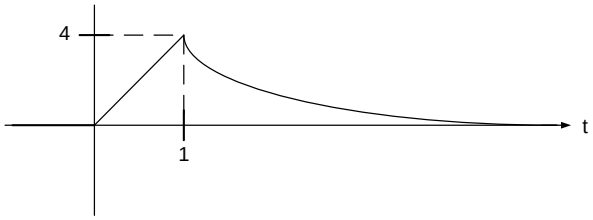
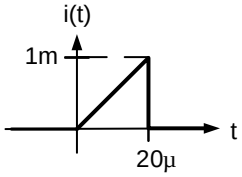
1. **Given** $v(t)=\begin{cases}0, & t\le 0,\\ 4t, & 0<t\le 1\\ 4e^{-(t-1)}, & t>1\end{cases}$



across a $\frac{1}{2}\mu F$ capacitor

a) **Find** $i(t)$ through it
b) **Find** $p(t)$ delivered to it (power)
c) **Find** $w(t)$ stored in it (energy)
d) **Find** $\int_0^\infty p(t)\ dt$ and comment on its significance

2. **Given** $i(t)=\begin{cases}0, & t\le 0\,\text{s},\\ 500t, & 0<t\le 20\mu s\\ 0, & t>20\mu s\end{cases}$



is delivered to an uncharged $0.2\mu F$ cap.

a) **Find** $v(t)$ across the capacitor for t ≥ 0
b) Why does a voltage remain on the capacitor after the current is zero from an intuitive viewpoint?

3. **Given** the following circuit
Find v_1 , v_2 , v_3 , i_1