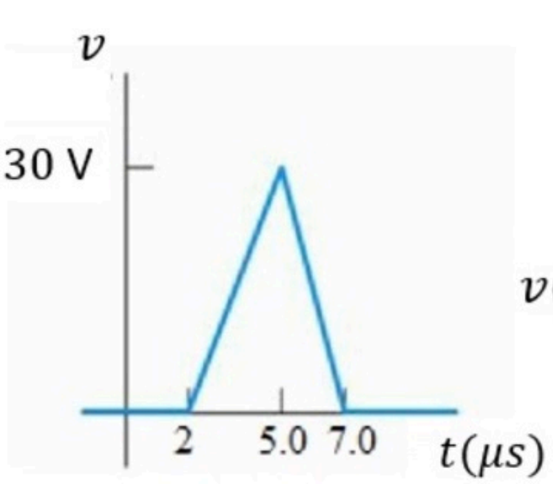
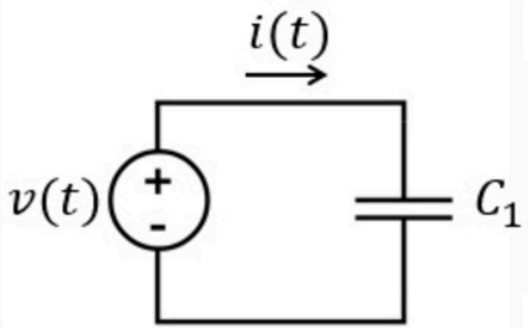
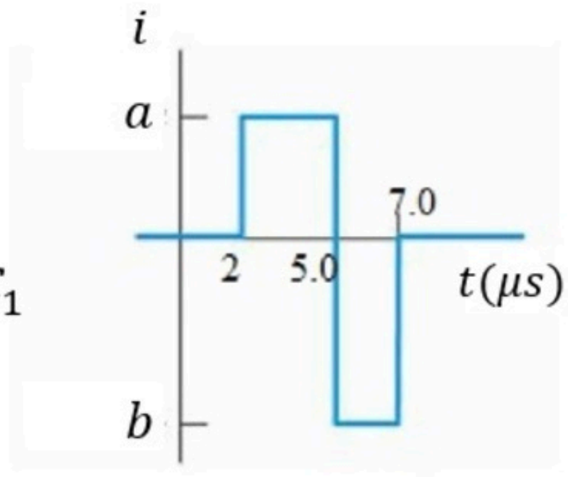
Capacitors Inductors 003

Problem has been graded.

Given the two plots of the voltage and current of the capacitor.
Find the values of a and b labeled on the graph.







Given Variables:

C1 : 8 nF

Calculate the following:

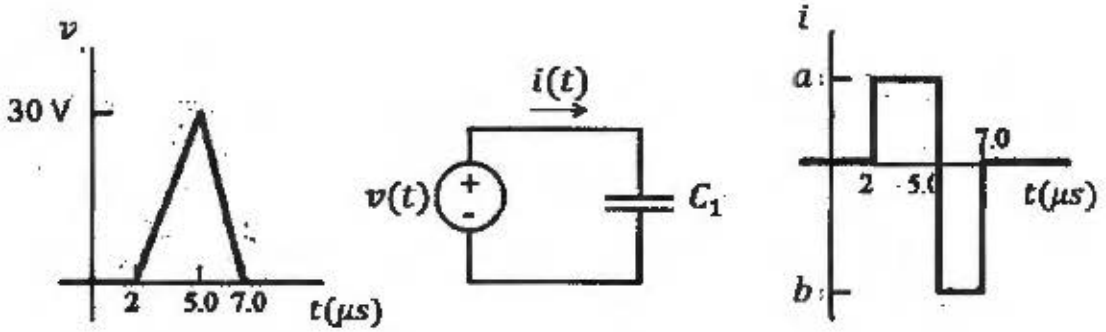
a (A) :

0.08 ✓

b (A) :

-0.12 ✓

Given the two plots of the voltage and current of the capacitor. C1 = 1 nF
Find the values of a and b labeled on the graph.



$$i = C \frac{dv}{dt}$$

⊗ FOR $2\,\mu s < t < 5\,\mu s$: $\frac{dv}{dt} = \frac{\Delta v}{\Delta t} = \frac{30\ V}{3 \cdot 10^{-6}\ s}$

$$i = 10^{-9} \cdot \frac{30}{3 \cdot 10^{-6}} = 10 \cdot 10^{-3} = 0.01$$

$a = 0.01$ A

⊗ FOR $5\,\mu s < t < 7\,\mu s$: $\frac{dv}{dt} = \frac{\Delta v}{\Delta t} = \frac{-30\ V}{2 \cdot 10^{-6}\ s}$

$$i = 10^{-9} \frac{(-30)}{2 \cdot 10^{-6}} = -15 \cdot 10^{-3} = -0.015$$

$b = -0.015$ A