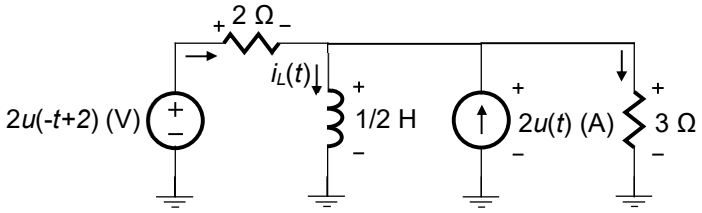
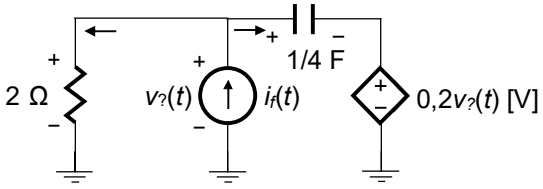
First Test, Circuits III, August 29, 2023, Danilo Rairán

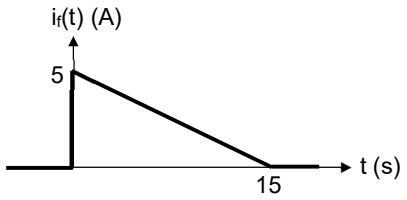
Name: _____Code: _____

1. **a**) compute the o.d.e for i_L, using symbols instead of numerical values.
Use superposition. (0.5/2.5)
Compute and plot the following equations (you can use the synthetic form):
b) natural responses, (0.8/2.5)
c) forced responses, (0.7/2.5)
d) complete response. (0.5/2.5)



2. **a**) Compute an o.d.e for $v_?(i_f)$ using symbols instead of numerical values. (0.5/2.5)
Compute and plot the following equations:
b) natural responses. (0.8/2.5)
c) forced response. (0.7/2.5)
d) complete response. (0.5/2.5)





3. **Bonus 1**: How would you mathematically prove that one of your complete answers is correct?
Bones 2: Applie that mathematical proof to one of the exercises.

First Test, Circuits III, March 6, 2023, Danilo Rairán

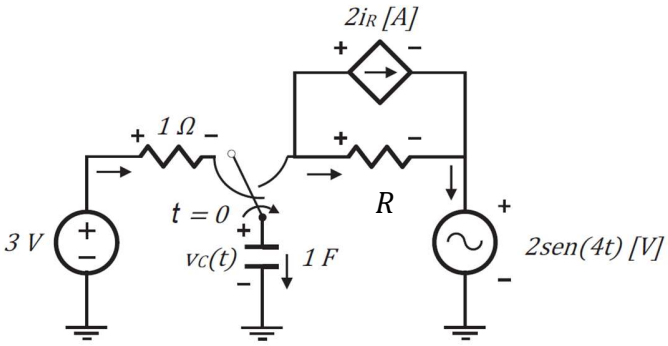
Name: _____ Code: _____

= last digit of your code + 1.

1. **Compute and plot** the natural, forced and complete responses for the voltage in the capacitor, $v_C(t)$.

$R = 1 + \#/10 \ \ (\Omega)$

i_R is the current through R.

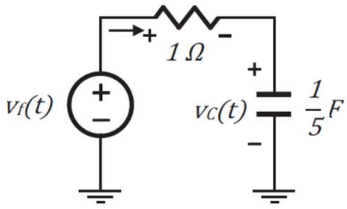


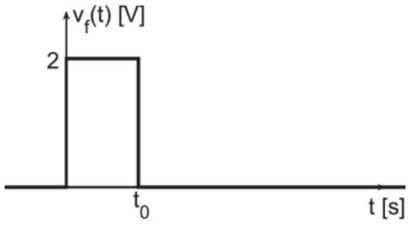
2. Using Laplace Transform, **compute and plot** the zir, zsr and complete response for the voltage in the capacitor, $v_C(t)$.

Assume $v_C(0) = 1\ V$.

$t_0 = (1 + \#/10)\tau\ (s)$

In addition, show that the answer satisfies the **ode**.





1. 2.5 **2.** 2.5