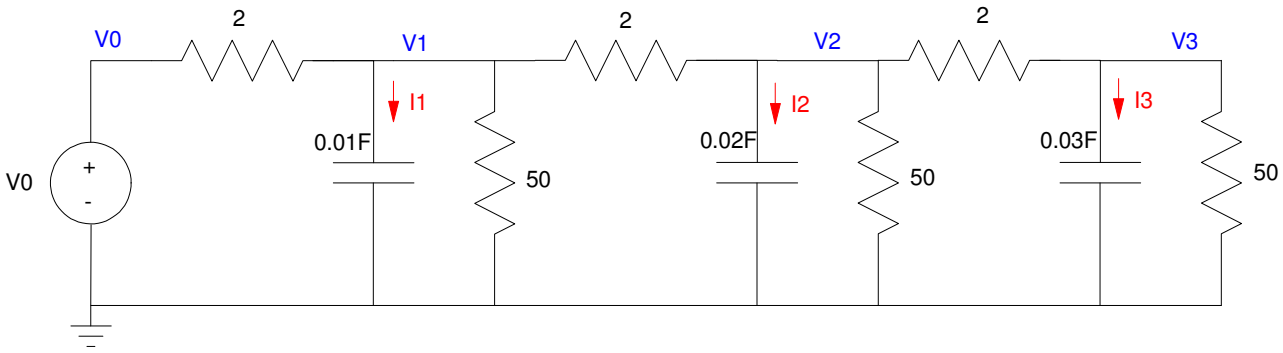
ECE 343 - Homework #16

Circuit Analysis using LaPlace Transforms - Summer 2018

Problem 1 -3) Assume Vo(t) = 0.



Problem 1: Assume v1(0) = v2(0) = v3(0) = 10V.

- Write the dynamics for this system (i.e. the voltage node equations using LaPlace notation
- Place in matrix form
- Find v3(t) (Matlab graph of v3 vs. time)

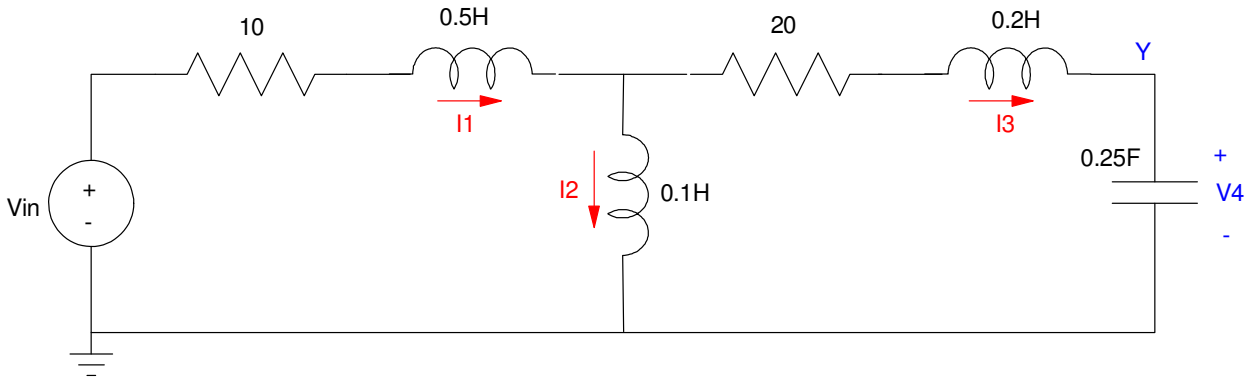
Problem 2: Assume v3(0) = 10.

- What initial coniditons on v1(0) and v2(0) result in v3(t) decaying as slow as possible?
- Find V3(t) for these initial coniditons.

Problem 3: Assume v3(0) = 10.

- What initial coniditons on v1(0) and v2(0) result in v3(t) decaying as fast as possible?
- Find v3(t) for these initial coniditons.

Problem 4-6: Assume vin(t) = 0.



Problem 4: Assume

- i1(0) = i2(0) = i3(0) = 2A.
- v4(0) = 10V.

i) Write the dynamics for this system (i.e. the voltage node equations using LaPlace notation

ii) Place in matrix form

iii) Find v4(t) (Matlab graph of v4 vs. time)

Problem 5: Assume v4(0) = 10.

- What initial coniditons on i1(0), i2(0), and i3(0) result in v4(t) decaying as slow as possible?
- Find v4(t) for these initial coniditons.

Problem 6: Assume v4(0) = 10.

- What initial coniditons on i1(0), i2(0), and i3(0) result in v4(t) decaying as fast as possible?
- Find v4(t) for these initial coniditons.