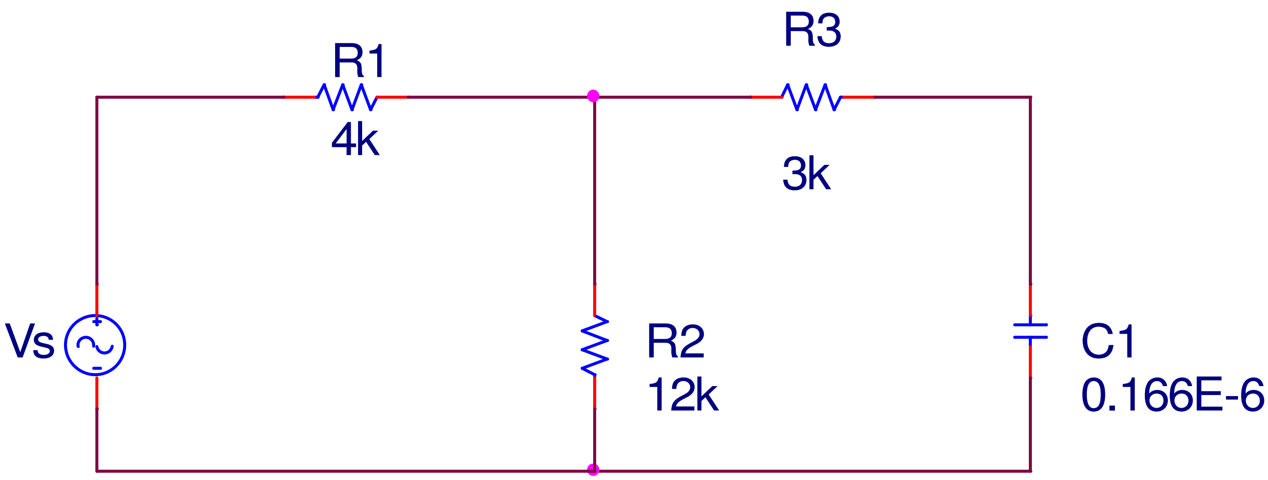
Questions:
LEC 18: What is phasor notation?
How does phasor notation relate to measureable signals?
How do capacitors behave as a function of frequency?
How do inductors behave as a function of frequency?
What does it mean if we say an impedance is capacitive? inductive?
How do we transfer functions to determine phasor problems?

LEC 19:
What is admittance?
What are Kirkoff's laws with phasors?

1) Review: RC Circuits with Phasors



The source is a 5V sinusoidal signal with a frequency of 239.7Hz and has a zero phase.

$f := 239.7\text{Hz}$

$\omega := 2\cdot\pi\cdot f$

$\omega = 1.506\times 10^{3}\cdot\frac{\text{rad}}{\text{s}}$

a. Determine the phasor expression for the voltage source

b. Determine the impedance seen by the source

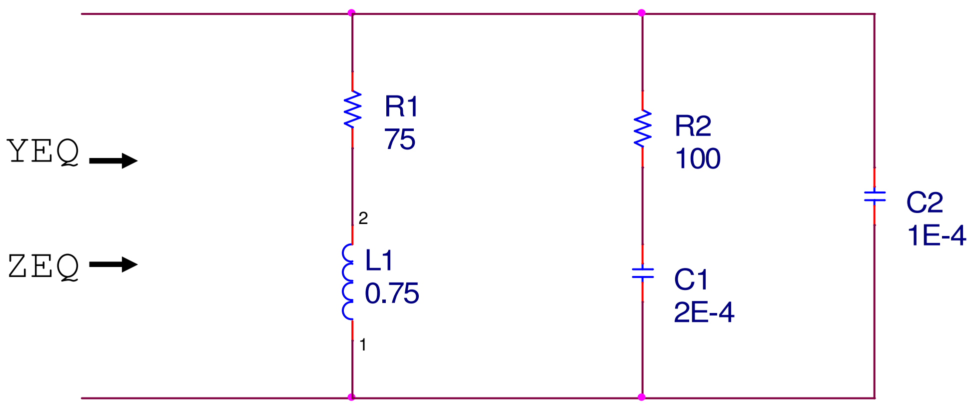
c. Determine the phasor expression for the current through the source.

d. Determine the phasor expression for the voltage across resistor R2.
Determine the phasor expression for the voltage across C1.

TEAM ASSIGNMENT!

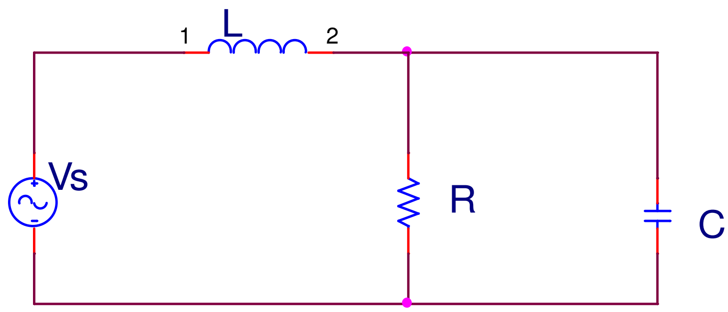
e. Determine the time domain expression for the voltage across C1.

2. Admittance



a. Determine the equivalent admittance, Y_{EQ}, for the above circuit for a frequency of 15.9 Hz. Determine the equivalent impedance, Z_{EQ}.

3. Transfer functions



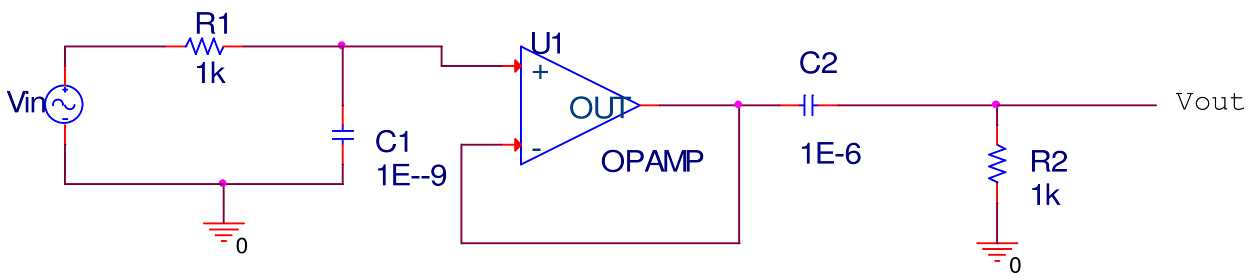
Determine the transfer functions in the following circuit. Determine the behavior of the transfer function as ω goes to 0 and ω goes to ∞.

a. $H(s) = \frac{V_C(s)}{V_S(s)}$ voltage across C relative to the source voltage

b. Determine the magnitude of the transfer function as frequency approaches zero.

c. Determine the magnitude of the transfer function as frequency approaches infinity.

4. Transfer functions-multiple stages



a. How many stages are present in the above circuit?

b. Determine the transfer function, $H(s) = \frac{V_{out}}{V_{in}}$.