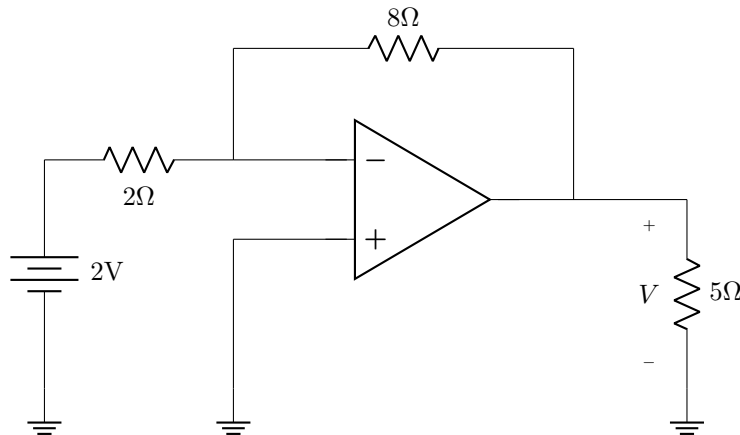


Check the LTspice files of these circuits and more in

1 Ideal Op-Amp Circuits

Find: V (in volts) using LTspice.

Hint: Type "opamp" in the Select Component Symbol window. Don't forget to include the SPICE directive .lib opamp.sub

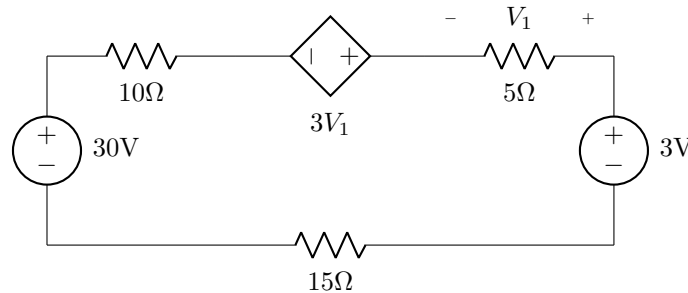


2 Dependent Sources

2.1 Voltage Controlled Voltage Source

Find: V_1 (in volts) using LTspice.

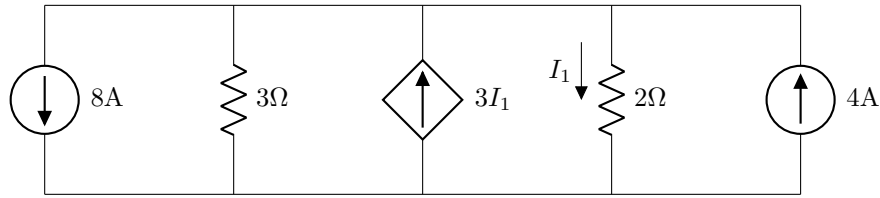
Hint: Type "e" in the Select Component Symbol window.



2.2 Current Controlled Current Source

Find: I_1 (in amperes) using LTspice.

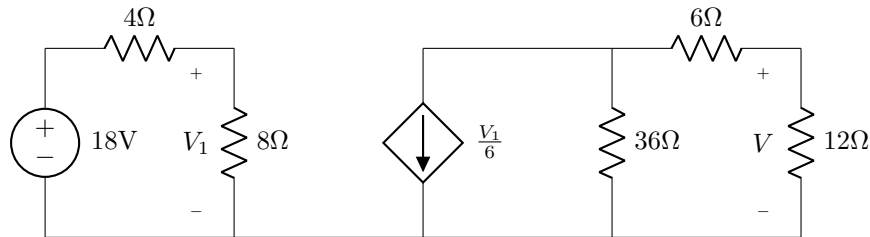
Hint: Type "f" in the Select Component Symbol window.



2.3 Voltage Controlled Current Source

Find: V (in volts) using LTspice.

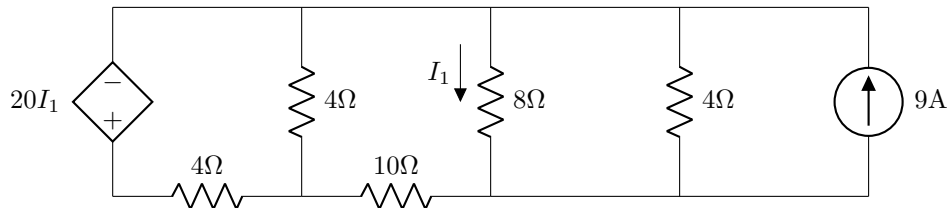
Hint: Type "g" in the Select Component Symbol window.



2.4 Current Controlled Voltage Source

Find: I_1 (in amperes) using LTspice.

Hint: Type "h" in the Select Component Symbol window.

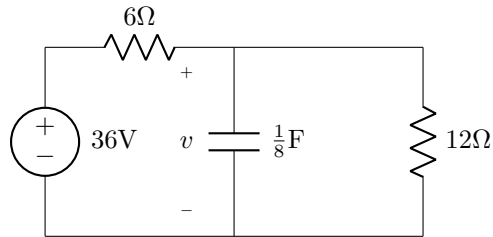


3 First and Second Order Circuits

3.1 First Order Circuit

Find: i and v for $t > 0$ using LTspice such that $v(0) = -6V$.

Hint: To assign the initial voltage of the capacitor, mouse over the node that is connected at the positive terminal of the capacitor (it is N002) then type the SPICE directive `.IC V(N002) = -6`

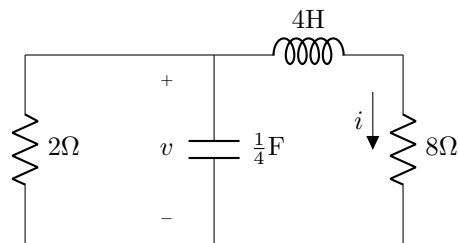


3.2 Second Order Circuit

Find: i and v for $t > 0$ using LTspice such that $v(0) = 8\text{V}$ and $i(0) = 4\text{A}$.

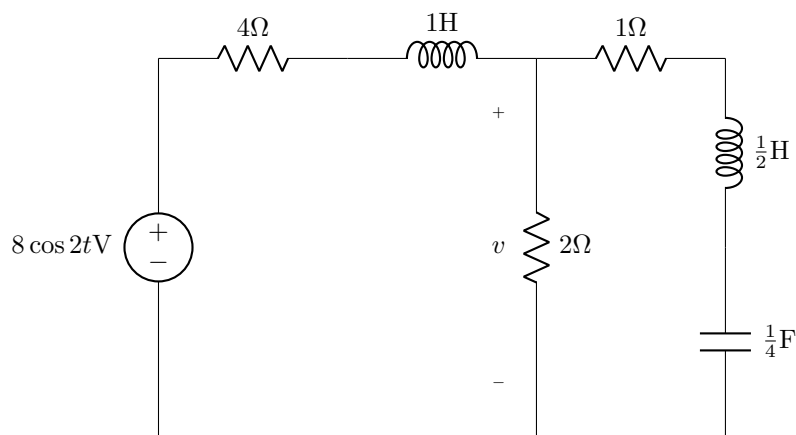
Hint: To assign the initial voltage of the capacitor, mouse over the node that is connected at the positive terminal of the capacitor (it is N001) then type the SPICE directive `.IC V(N001) = 8`

Another hint: To assign the initial current of the inductor, type the SPICE directive `.IC I(L1) = 4`



4 AC Analysis

Find: steady state value of v .



Hint: To simulate an AC Voltage Source, right click the voltage source and click the "Advanced" button. This will open another window to let you choose the behaviour of the voltage source. On the top right under the Small signal AC analysis(AC) section, type the values for the AC Amplitude (in volts) and AC Phase (in degrees) (8 and 0, respectively). After that, type the directive .ac list 2/(2*pi). Note that the frequency is in Hertz while the units in the problem is in rad/s; hence the 2π