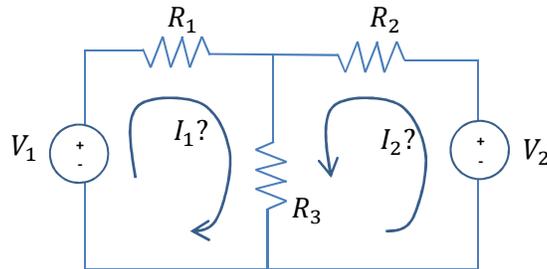


Take 3 full minutes to read the ENTIRE cover sheet first.

SUBMIT script file (NO ZIP) before the end of the class time. Turn in cover sheet.

An electrical circuit is set up the following way. Calculate the currents I_1 and I_2 (in Amps) that flow through this circuit.



Don't panic: the symbols and meaning are not important to solve the problem, but their values and the equations given below can be used to solve the problem graphically. With R values typically from 1 to 9 (in Ohms), V values typically from 1 to 10 (in Volts), I values tend to be very small (less than 1).

By solving the circuit, I_2 can be expressed as a function of I_1 by two equations. These equations are linear equations of the form $y(x) = m * x + b$:

Equation 1:
$$I_2(I_1) = -\frac{(R_1+R_3)}{R_3} * I_1 + \frac{V_1}{R_3}$$

Equation 2:
$$I_2(I_1) = -\frac{R_3}{(R_2+R_3)} * I_1 + \frac{V_2}{(R_2+R_3)}$$

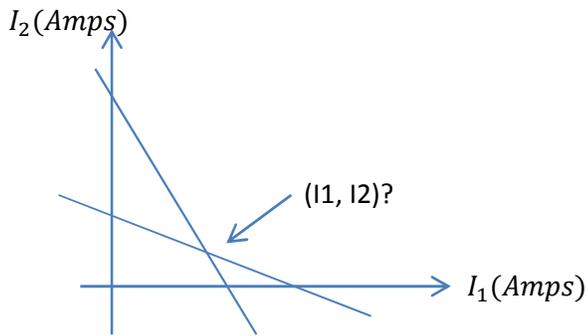
Assuming all values but the currents I_1 and I_2 are known by the user, develop a program that can solve the currents for any similar circuit by plotting both equations above and reading (I_1, I_2) on the intersection of these lines. When complete, fill in the table (5pts):

V1 (Volts)	V2 (volts)	R1 (Ohms)	R2 (Ohms)	R3 (Ohms)	I1 (Amps) 2 decimals	I2 (Amps) 2 decimals
5	7	4	5	2		
4	6	2	4	5		

Using the full 7 steps taught in this class, and only the material taught in this class at this time, develop a program that is easily reusable to solve the problem.

Step1(5pts):

Step2:



Step3: (Equations given already)

Step4: (Assume values from scenario1 (line 1 in the table))

Step5: (solve graphically – hence no step5 needed)

Step6: not applicable

Step7a (comments) and 7b (place directly on the script file).

Requirements for the program itself:

- **(12pts)** prompt the user for the values of $V_1, V_2, R_1, R_2,$ and R_3 .
- **(15pts)** define all vectors that can plot equation1 and 2
- **(10pts)** plot correctly, using colors, markers and line specifications AS SHOWN in the videos.
- **(15pts)** label the plot properly and fully

(7pts – other random errors!)

Within script:

name/section/description **(3pts)**

commands to clean up previous execution of MATLAB codes **(3pts)**

comments (which is considered the algorithm) **(5pts)**

spacing of code **(5pts)**

appropriate variable names (no single letters) **(5pts)**

semi-colon hiding intermediate calculations **(5pts)**

Step7c **(5pts)**: Verify mathematically your solution seems accurate.