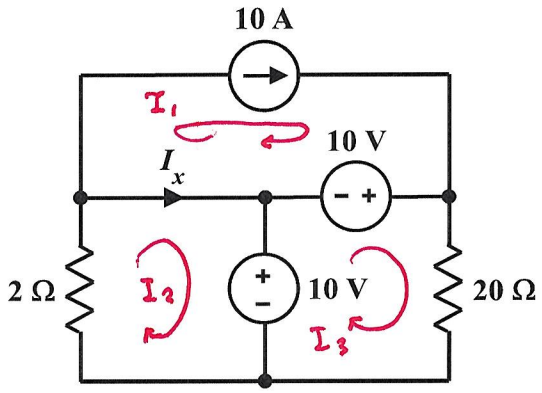
EE 2240

Homework Problem #030

a. Assign mesh currents and express the mesh equations in the matrix form discussed in class.



$I_1 = 10\ A$

$2I_2 + 10V = 0$

$-10V - 10V + 20I_3 = 0$

In matrix form:

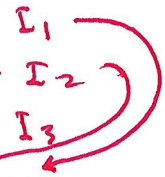
$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 20 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix} = \begin{bmatrix} 10 \\ -10 \\ 20 \end{bmatrix}$$

b. Use MATLAB to solve the equations and determine the value of I_x. Show your work.

See the next page.

$I_x = -15\ A$

```
>> A=[1 0 0; 0 2 0; 0 0 20]

A =

     1     0     0
     0     2     0
     0     0    20

>> c=[10 -10 20]'

c =

    10
   -10
    20

>> b=A\c

b =

    10
    -5
     1
```




```
>> Ix=b(2)-b(1)

Ix =

   -15

>>
```