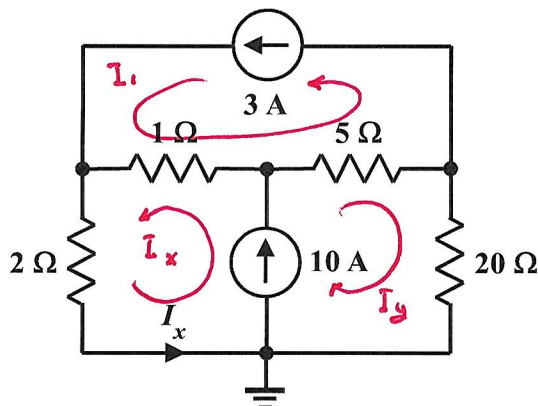# Homework Problem #029

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

$$I_1 = 3A$$

$$I_x + I_y = 10\,A$$

$$1(I_1 - I_x) + 5(I_y + I_1) + 20\,I_y - 2\,I_x = 0$$

In matrix form:

$$
\begin{bmatrix}
1 & 0 & 0 \\
0 & 1 & 1 \\
6 & -3 & 25
\end{bmatrix}
\begin{bmatrix}
I_1 \\
I_x \\
I_y
\end{bmatrix}
=
\begin{bmatrix}
3 \\
10 \\
0
\end{bmatrix}
$$

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

See the results on the next page.

$$I_x \approx 9.5714\,A$$

```
>> A=[1 0 0; 0 1 1; 6 -3 25]

A =

    1    0    0
    0    1    1
    6   -3   25

>> c=[3 10 0]'

c =

    3
   10
    0

>> b=A\c

b =

   3.0000        ← [₁
   9.5714        ← [ₓ
   0.4286        ← [ᵧ

>>
```