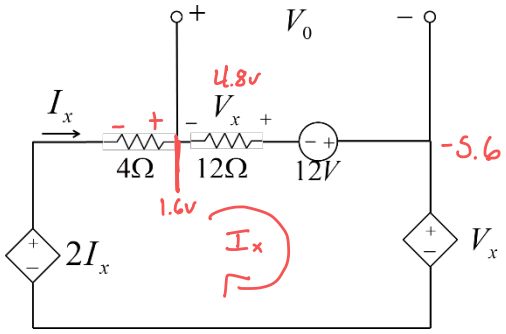
ECEN3714 **Homework #02**

Section # 2069 Name (PRINT): Bennett (LAST NAME), Roger (First Name)

Equations and the law leading to the equations must be clearly written.

2.1 Find V_0 in the circuit in the following figure **(5 points**):



$2I_x + 4I_x + 12I_x + 12 + 12I_x = 0$

$30I_x = -12 \Rightarrow I_x = -\frac{2}{5}A$

$V_0 = 1.6 - (-5.6)$

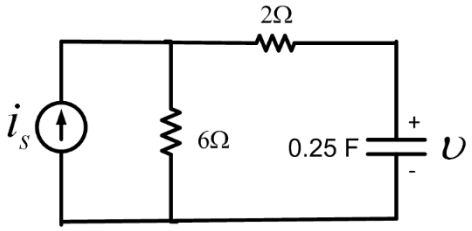
$= 7.2v$

$-(-\frac{2}{5}\cdot 4) - (-\frac{2}{5}\cdot 12)(-12v + (\frac{2}{5}\cdot 12) - 2(-\frac{2}{5})) =$

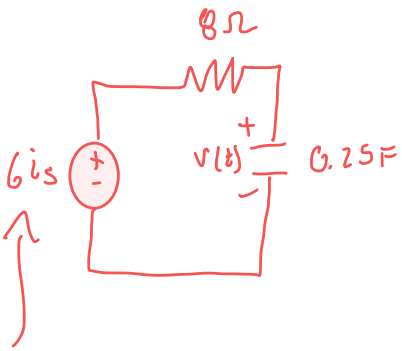
$1.6 + 4.8 = 6.4$ $\quad -6.4 = 0$

2.2 For the circuit shown, given $i_s(t) = 5\,u(t-10)$ Amps (i.e., a current of 5A is applied at t=10 second. Find $\upsilon(t)$ then plot $\upsilon(t)$. (3 points for v(t), and 2 points for the plot)

(Note: you may find that using source transformation is convenient for solving this problem. However, you can also solve this problem by the hard way of applying KCL/KVL).



$\tau = \frac{1}{4}\cdot 8 = 2$



$v(t) = 30\left[1 - \exp(-\frac{t-10}{2})\right]\cdot u(t-10)$

$V_0 = 30v$

$\frac{30v}{8\Omega} = 3.75A$