

**E84: HW2 (Due in class, Wednesday, September 19th)**

In these problems, if you get to the point of solving  $n$  equations for  $n$  unknowns and you find the math tedious (and  $n$  is greater than 2) feel free to use Matlab or some other method to speed up your progress. I don't want you to spend time on the tedious math that you could be using to understand the underlying principles. That said, don't get too reliant on calculators in this class. You should be able to do basic solutions/algebra/etc. and feel somewhat comfortable with Cramer's rule or other methods for solving these types of problems. You won't be allowed to use your calculator for this purpose on your exams.

1. (10 points) FoEE 2.3
2. (10 points) FoEE 2.7
3. (20 points) In FoEE, Fig. P1.39: Assume  $R_1=4\Omega$  and  $R_2=4\Omega$ .
  - a) Calculate the current  $i$ , using mesh analysis.
  - b) Find the Thevenin equivalent circuit as seen from the two terminals that are connected by the  $4\Omega$  "bridge" resistor (the one that " $i$ " is traveling through). Label the left node as " $a$ " and the right node as " $b$ ." Be sure to actually draw your Thevenin equivalent circuit.
  - c) Find the Norton equivalent circuit from the same two terminals as in part (b). Again, be sure to draw your Norton equivalent circuit.
  - d) Using your result from (b) or (c), calculate the current  $i$  through a  $4\Omega$  load resistor.
4. (10 points) FoEE 2.41
5. (10 points) FoEE 2.61

Optional Problems

6. (0 points) FoEE 2.14
7. (0 points) FoEE 2.23
8. (0 points) FoEE 2.25