Reading: Sections 5.1, 5.2, 5.3, 5.4, 5.6 in Hayt/Kemmerly/Durbin

Do all of the Practice problems in the Reading assignment (but do not hand them in).

**NOTE 1:** Some of the problems below have an indicated method (e.g., superposition, source transform). For those problems, you must use the indicated method to solve the problem, but you may check your answers using any method. **NOTE 2:** Some of the problems direct you to perform some sort of a check on your work. This check must be done to receive full credit for the problem.

2. Use Figure 5.50 on p. 160 for this problem, which is about the linearity principle, in particular, the scaling part of linearity. In that circuit, change both source values so that the magnitude of $i_x$ is doubled and the direction of $i_x$ is reversed. It is not necessary to find the original value of $i_x$ to solve this problem.
3. Find both $I_1$ and the power absorbed by the 11 $\Omega$ resistor in Figure 5.66 on p. 164 using superposition. Recall that superposition applies only to independent sources. Also recall that superposition does not apply to power, so you will first need to find the total value of $I_1$ and then find the power absorbed by the 11 $\Omega$ resistor.
4. Use repeated source transforms (plus resistor combinations and source combinations as necessary) to reduce the circuit of Figure 5.55 to a single-loop circuit, then find the value of $v_x$.
5. Use the circuit of Figure 5.68 for this problem.
   a. For this part, do the following. First, transform the 2V and 6 $\Omega$ elements. Then combine the resulting independent current source and the dependent current source into a single hybrid current source. The value of this source will be a constant plus some scalar times $v_3$. This hybrid current source can be transformed into a hybrid voltage source just as with independent sources. When you do this, you should have a single-loop circuit with one dependent voltage source (on the right) and a hybrid independent/dependent voltage source (on the left). Use this circuit to solve for $v_3$.
   b. To verify that the above method is valid, use mesh analysis on the original circuit to find $v_3$.
6. Use the circuit of Figure 5.69 for this problem.
   a. First, determine the Thevenin equivalent of the network connected to $R_L$ using repeated source transforms and resistor combinations.
   b. Now, determine the Thevenin equivalent of the network connected to $R_L$ by first finding $V_{oc}$ and $I_{sc}$ (in the proper arrangement). Then use those values to determine the Thevenin equivalent.
7. Problem 5.32, p. 166, but add 2 more parts:
a. This is the part stated in the book.

b. Now attach a 4.7 Ω resistor to the terminals of your Thevenin equivalent and calculate the current through that resistor.

c. Confirm your answer to the last part by connecting a 4.7 Ω resistor across the terminals of the original network and finding the current through that resistor using nodal analysis.