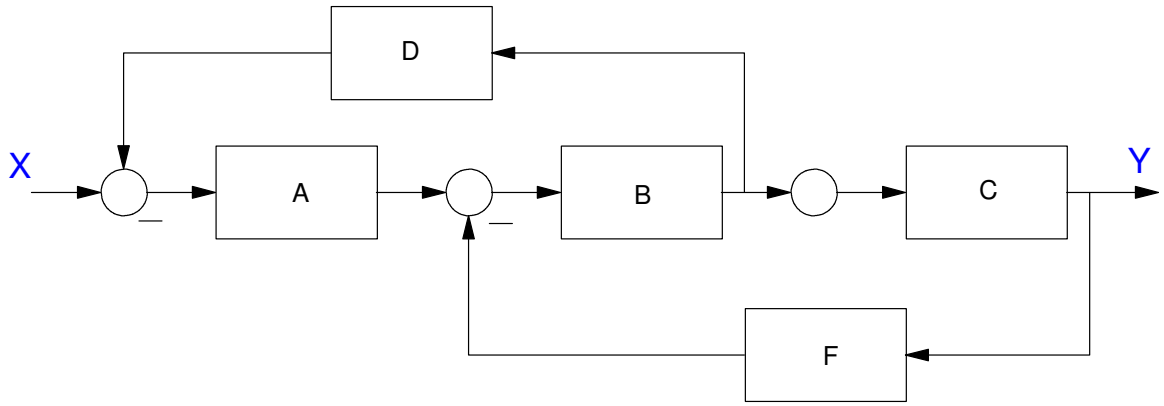
Homework #5: ECE 461/661

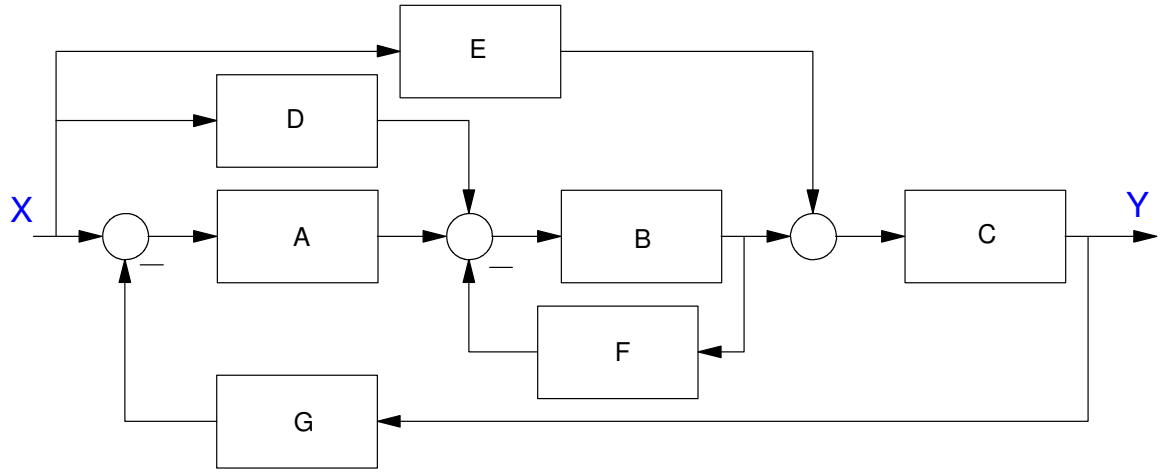
Block Diagrams, Canonical Forms, Electrical Circuits. Due Monday, September 18th

Block Diagrams

1) Determine the transfer function from X to Y



2) Determine the transfer funciton from X to Y



Canonical Forms

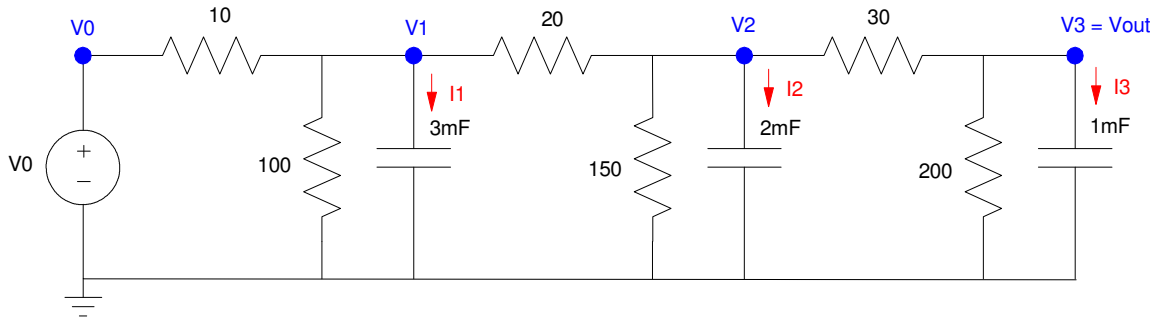
3) Give two different state-space models that produce the following transfer function

$$Y = \left(\frac{2s+20}{(s+1)(s+3)(s+5)+10} \right) U$$

Electrical Ciruits

4) Using state-space methods, find the transfer function from V0 to V3

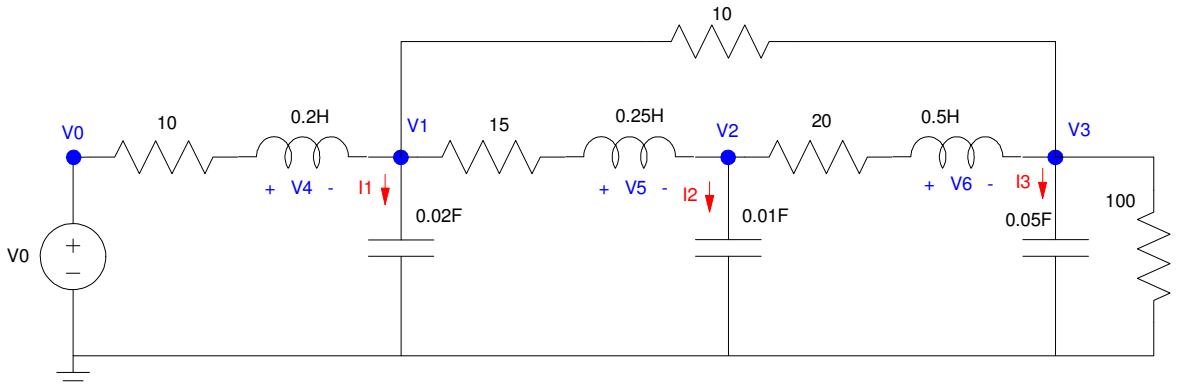
5) Using state-space methods, find the transfer function from V0 to V1



Problem 4 & 5

6) Express the dynamics for the following RLC circuit in state-space form.
   - Find the transfr function from V0 to V3

7) Assume V0 = 0. Specify the initial conditions so that V3(0) = 1V and
   - The transients decay as slow as possible
   - The transients decay as fast as possible



Problem 6 & 7