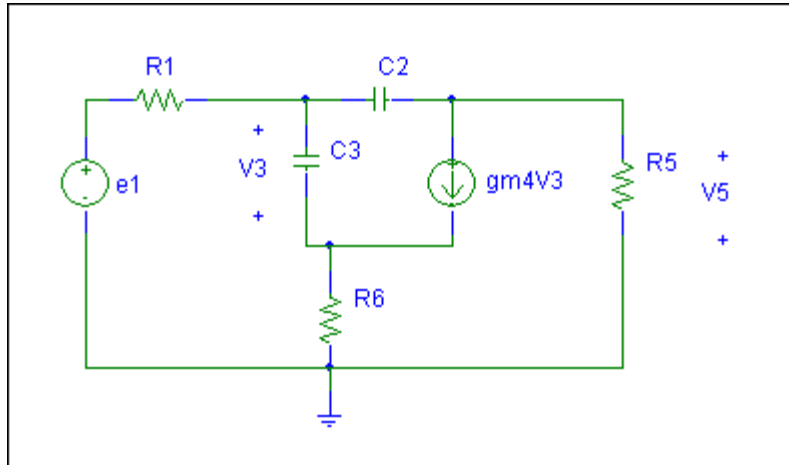


1. 50 points (setting up semistate equations)

For the following circuit, draw the graph using branches numbered as the components (include the source e1 in the same branch as R1), orient branches from left to right or top to bottom, and choose branches 1,2,3 as the tree. Use the tree branch voltages and the link currents for the semistate x , input $u=e1$ and output $y=v5$. Write the semistate equations $E\dot{x}=Ax+Bu$, $y=Cx$.



2. 50 points (obtaining transfer function)

- Form $Y/U=C(sE-A)^{-1}B$ to get the voltage transfer function $T(s)=V5/E1$.
- Give the poles and zeros of the transfer function $T(s)$