## Problem S3 (Signals and Systems)



1. For the circuit above, find the branch voltages and branch currents using the node method. The component values are:

$$
\begin{aligned}
R_{1} & =3 \Omega \\
R_{2} & =2 \Omega \\
R_{3} & =3 \Omega \\
R_{4} & =3 \Omega \\
R_{5} & =1 \Omega \\
I_{8} & =5 \mathrm{~A} \\
V_{7} & =3 \mathrm{~V}
\end{aligned}
$$

2. Verify that the net power dissipation of the circuit is zero, that is, that

$$
\begin{equation*}
\sum_{n=1}^{7} i_{n} v_{n}=0 \tag{1}
\end{equation*}
$$

