Physics 517/617 Homework 1 (Due Apr 3rd)

Introductory Electronics for Scientists and Engineers}, Simpson

Chapter 1 problems: 1-12, 1-14, 1-28, 1-36, 1-39, 1-41

1) *(Fundamentals of Physics, Haliday&Resnick 9-45)* Calculate the current through each voltage sources assuming $R_1=1.0\,\Omega$, $R_2=2.0\,\Omega$, $\varepsilon_1=2.0\,V$, $\varepsilon_2=4.0\,V$, and $\varepsilon_3=4.0\,V$. Indicate which batteries are charging and which are discharging.

![Image 1](image1.png)

2) *(Fundamentals of Physics, Haliday&Resnick 9-47P)* What current, in terms of $\varepsilon$ and $R$, does the ammeter below read? Indicate the current direction on the diagram. (Assume that $A$ has zero resistance.)

![Image 2](image2.png)

3) Show that the resistance of this infinite network of resistors is $R_T = (1 + \sqrt{3})R$, with $R_T$ the resistance looking into the network.