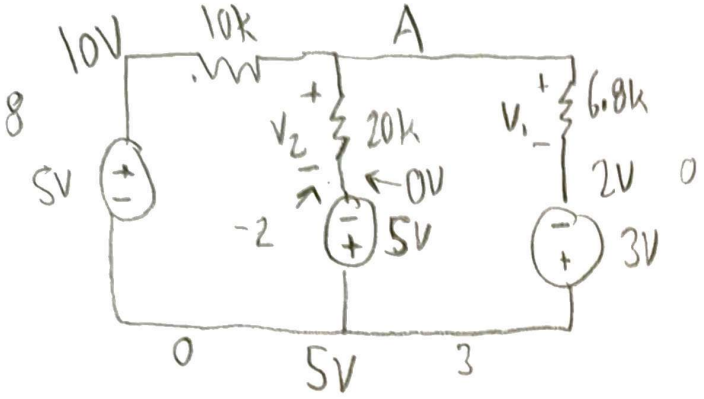
1



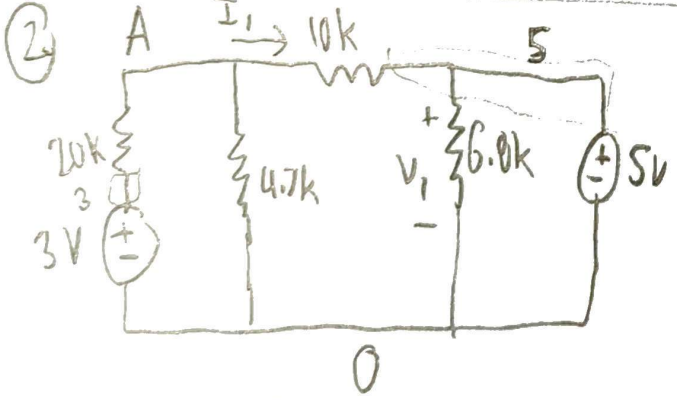
$$\frac{A-10}{10k}+\frac{A-0}{20k}+\frac{A-2}{6.8k}=0$$

measured:
$V_1=2.361$
$V_2=4.33$

$$\frac{101A}{340}=\frac{22}{17} \quad A=\frac{440}{101}\approx 4.36V$$

$$\boxed{V_1=2.36V \quad V_2=4.36V}$$

2



$$\boxed{V_1=5V}$$

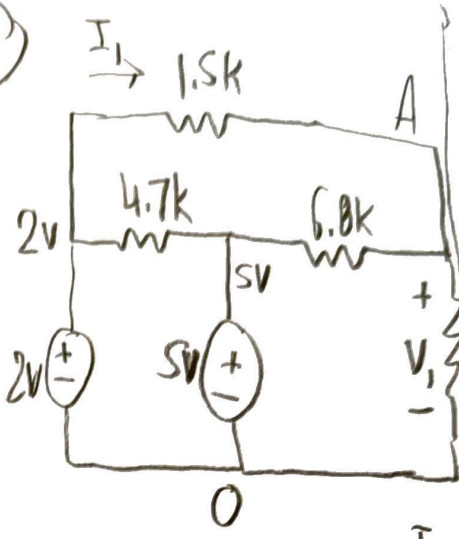
$$\frac{A-3}{20k}+\frac{A-0}{4.7k}+\frac{A-5}{10k}=0$$

$$\frac{A-5}{10k}=I_1 \qquad \frac{341}{440}A=\frac{13}{20} \quad A=\frac{611}{341}\approx 1.79V$$

$$\boxed{I_1=-0.32mA}$$

measured
$V_1=4.9947$ PE: -0.106%
$I_1=-0.326$ PE: 1.875%

3.



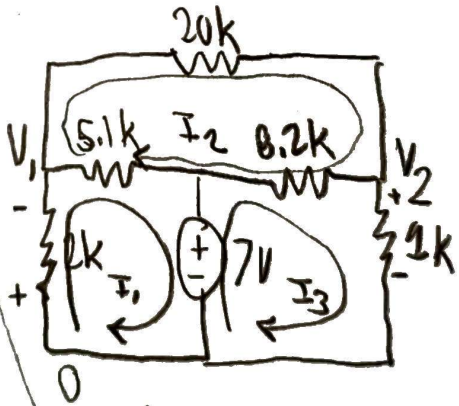
Measured
$V_1=2.395$
$I_1=0.264mA$
PE_V: 0%
PE_I: 0.38%

$$I_1=\frac{A-2}{1.5k}$$

$$\frac{A-2}{1.5k}+\frac{A-5}{6.8k}+\frac{A-0}{20k}=0$$

$$\frac{881}{1020}A=\frac{211}{102} \quad A\approx 2.395V$$

$$\boxed{I_1=0.263mA \quad V_1=2.395V}$$



$$2kI_1+5.1k(I_1-I_2)=-7V$$

$$20kI_2+8.2k(I_2-I_3)+5.1k(I_2-I_1)=0$$

$$8.2k(I_3-I_2)+1k(I_3)=7$$

$I_1\approx -0.935mA$ $\quad V_1=1.87V$
$I_2\approx 0.070mA$ $\quad V_2=0.824V$
$I_3\approx 0.824mA$