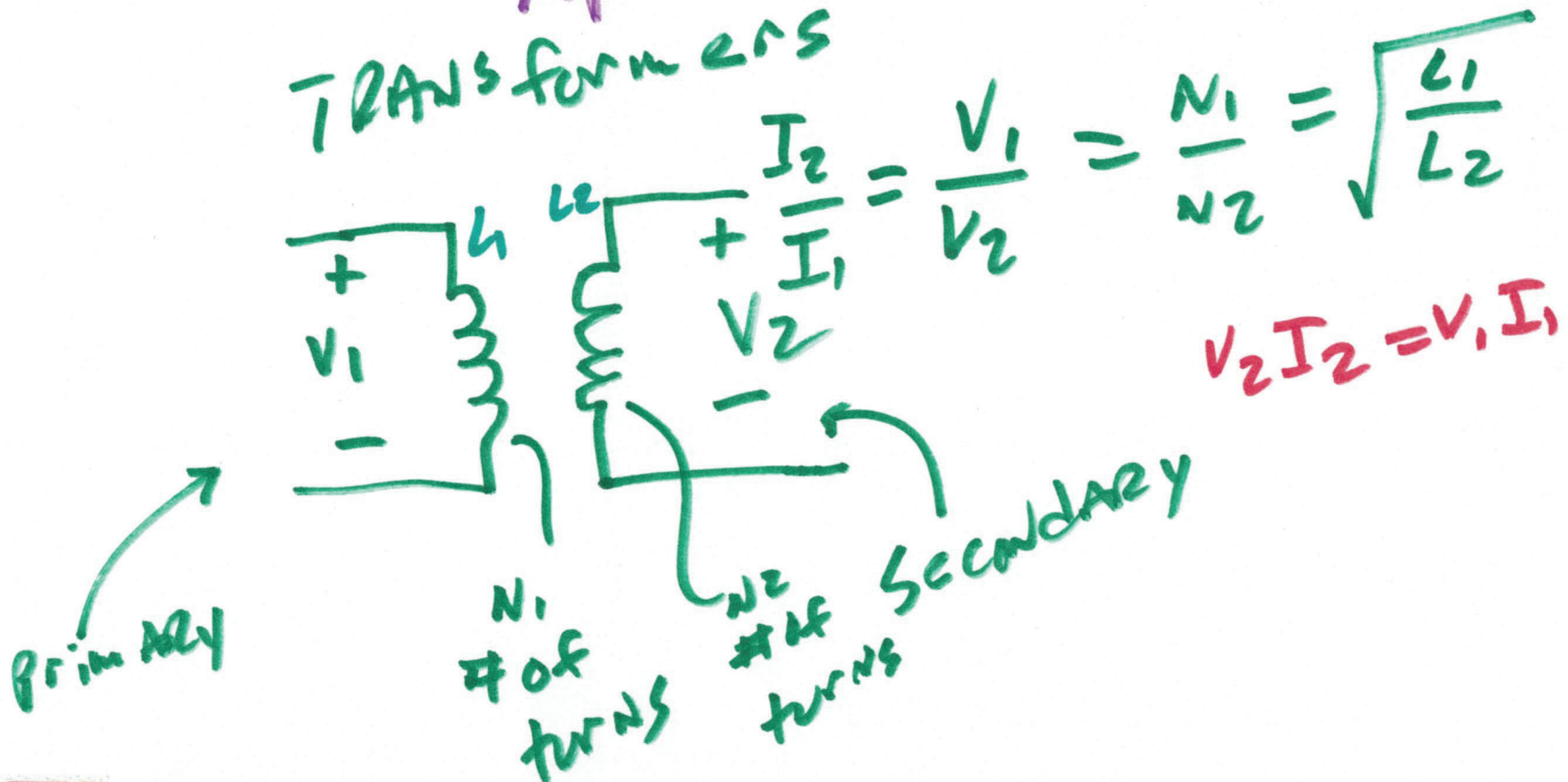


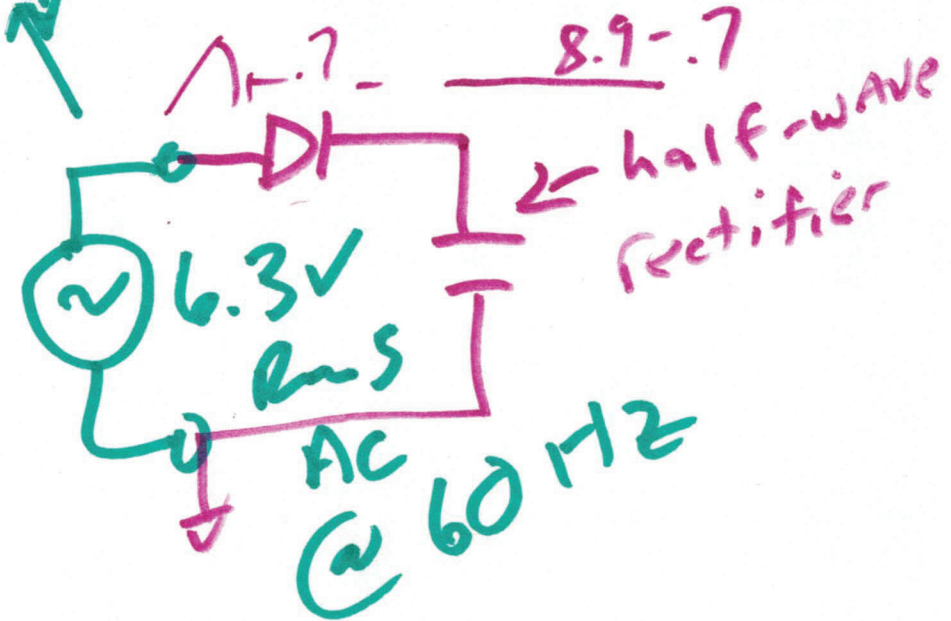
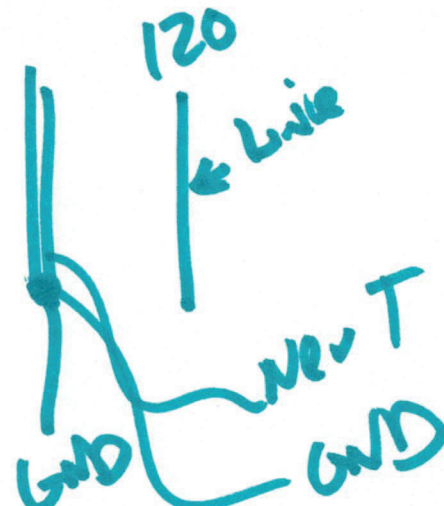
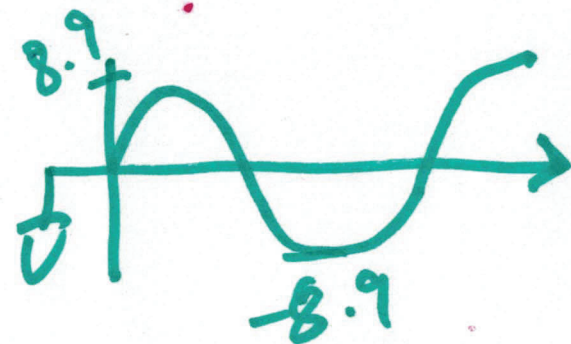
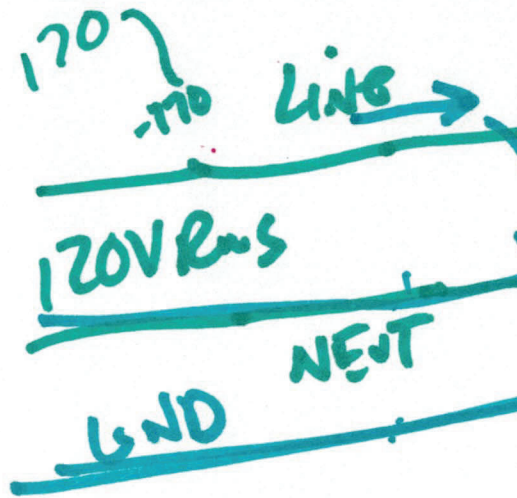
# EE 221 circuits II

## Lecture 23

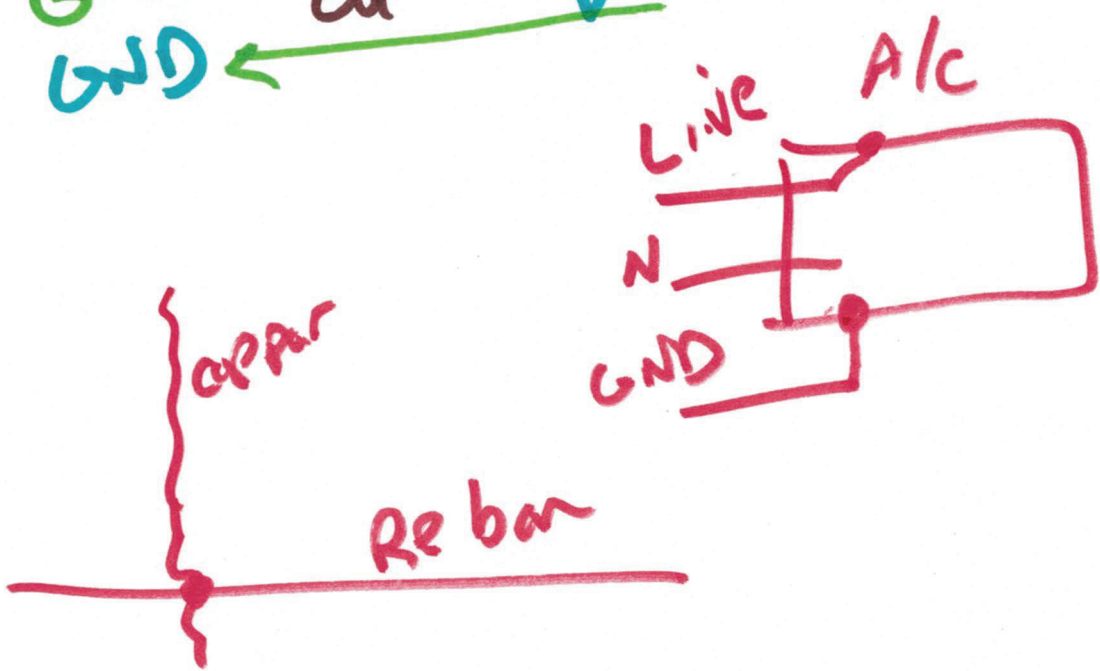
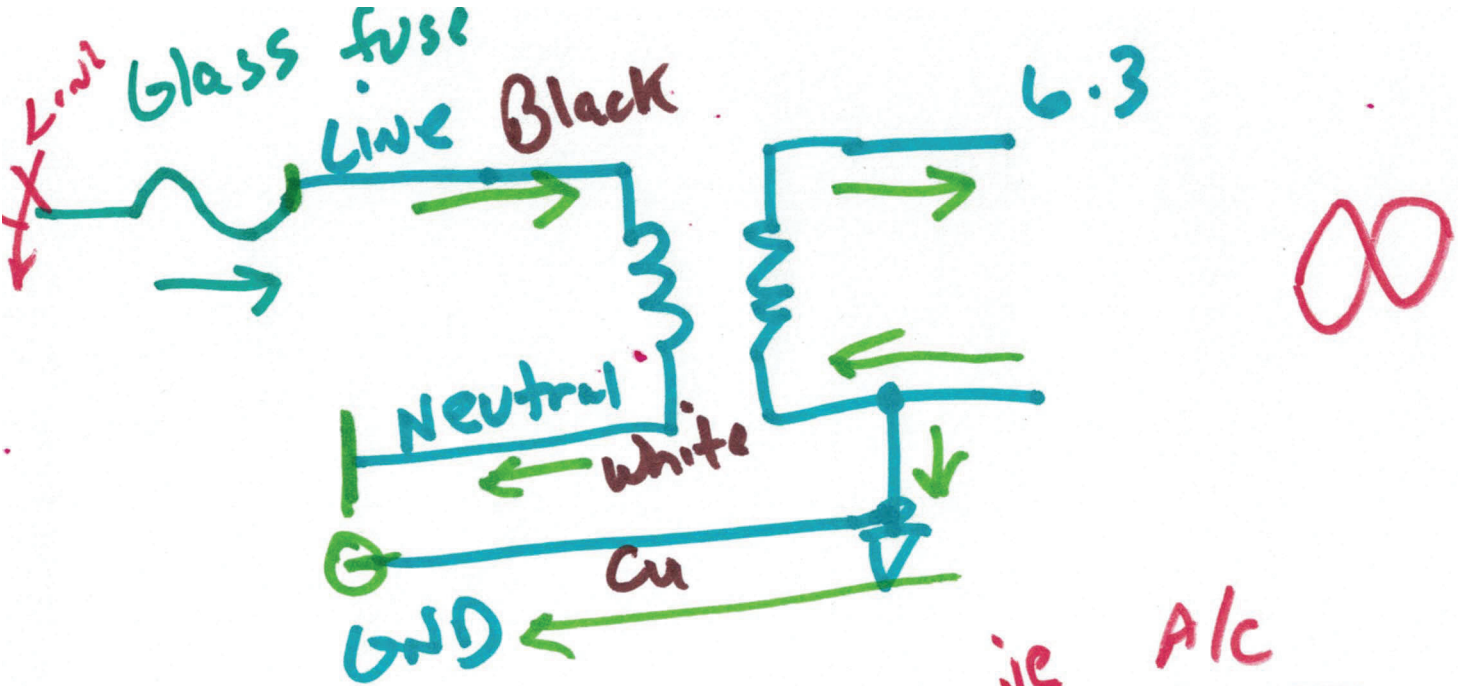
April 21, 2021

### TRANSFORMERS



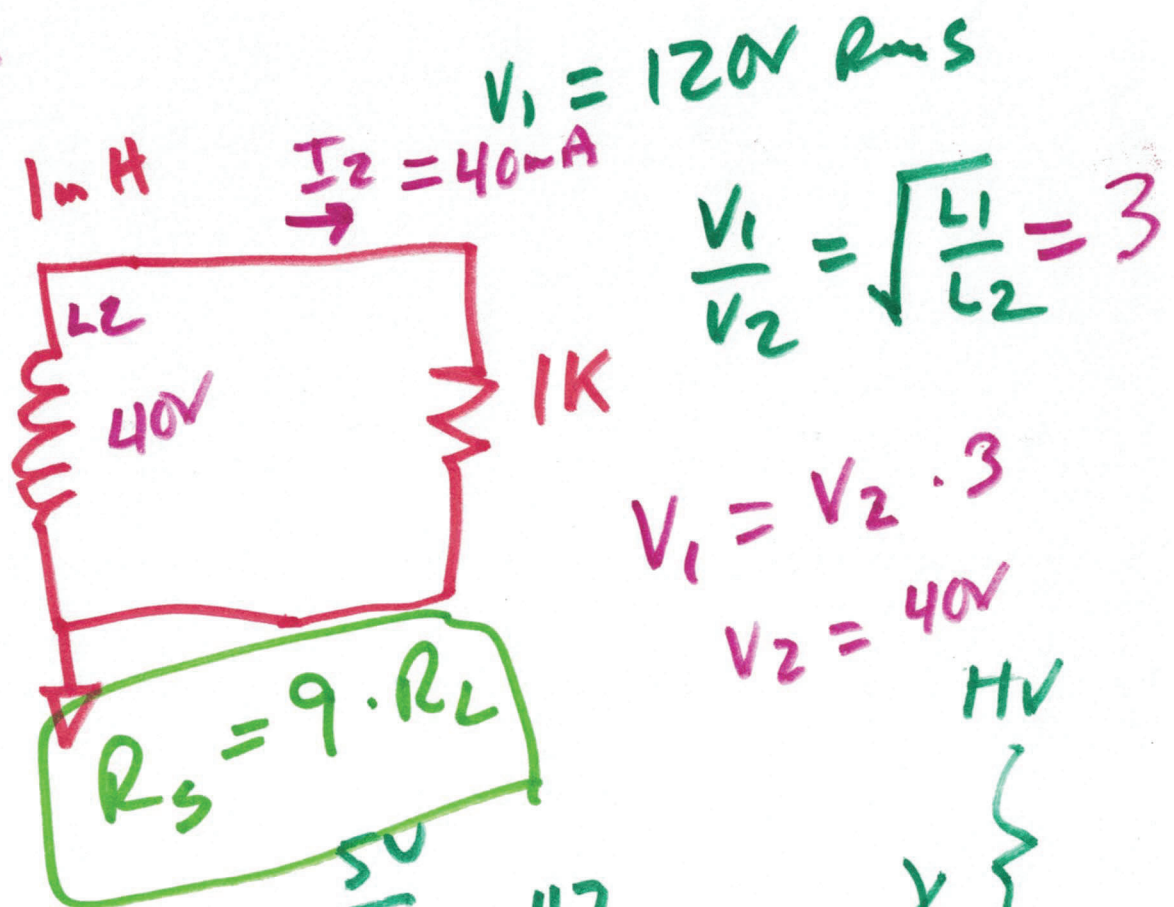
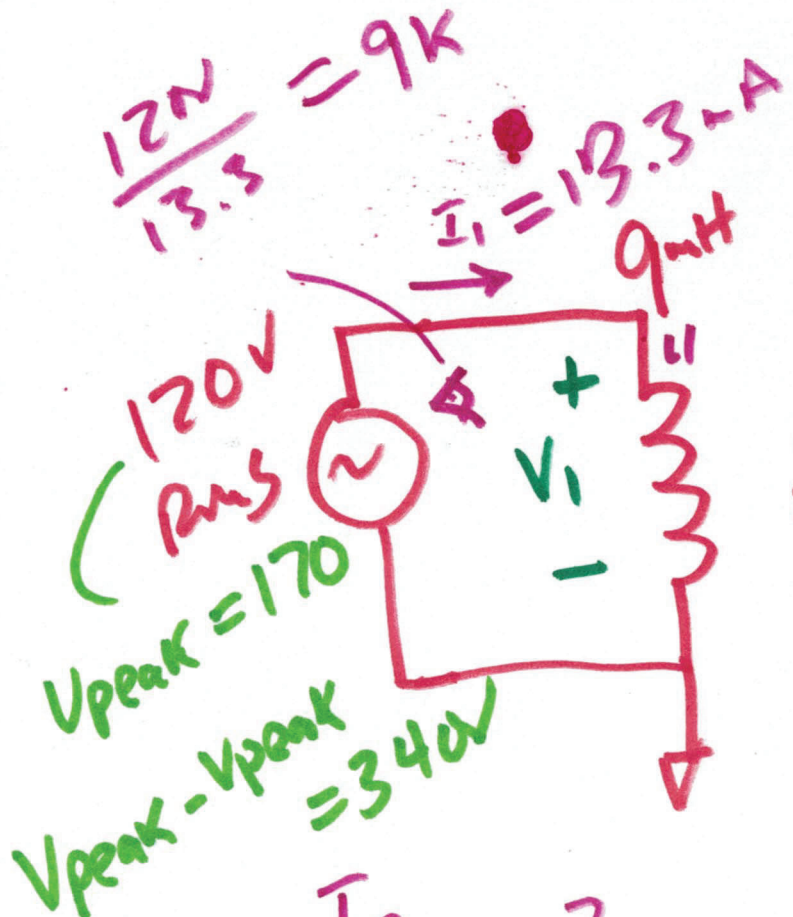


2)



3)

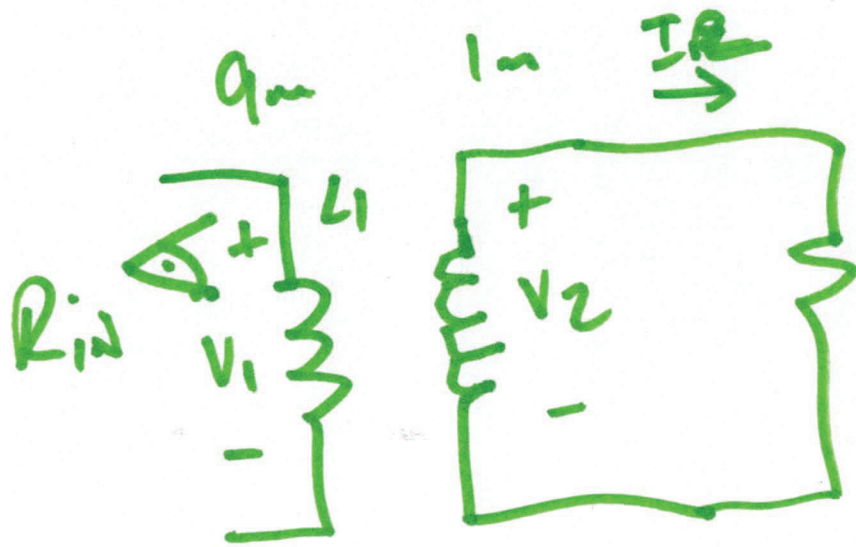




$\frac{V_1}{V_2} = \sqrt{\frac{L_1}{L_2}} = 3$   
 $V_1 = V_2 \cdot 3$   
 $V_2 = 40V$

$I_2 = 3$   
 $I_1 = \frac{I_2}{3} = 13.3mA$





$$R_L = \frac{V_2}{I_2}$$

$$\frac{I_2}{I_1} = \frac{V_1}{V_2} = \frac{N_1}{N_2}$$

$$R_{in} = \frac{V_1}{I_1} = \frac{\frac{N_1}{N_2} \cdot V_2}{\frac{N_1}{N_2} \cdot I_2}$$

$$\frac{I_2}{I_1} = \frac{N_1}{N_2}$$

$$R_{in} = \left(\frac{N_1}{N_2}\right)^2 \cdot R_L$$

$$I_2 \cdot N_2 = N_1 \cdot I_1$$

$$I_1 = I_2 \cdot \frac{N_2}{N_1}$$

$$R_{in} = \frac{L_1}{L_2} \cdot R_L$$

$$R_{in} = 9 \cdot R_L$$